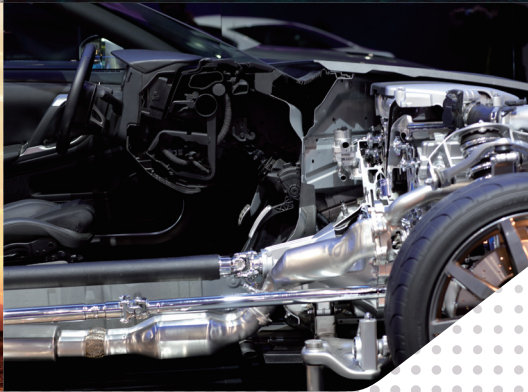


Authorized Distributor of **TOYOTA** Group
AICHI STEEL

SEKYUNG METAL

Stainless Steel

- | | | |
|--|---|--|
|  Angle |  Channel |  H-Beam |
|  Flat |  Round |  Square |
|  Hexagon |  Sheet & Plate |  Pipe |





Headquarters in Siheung-si

The passion we have held
A leader of stainless steel in a variety of shapes



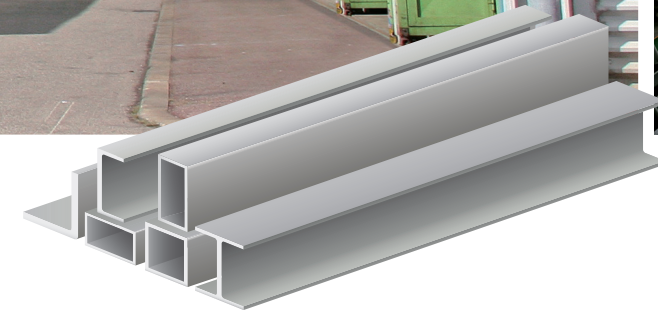
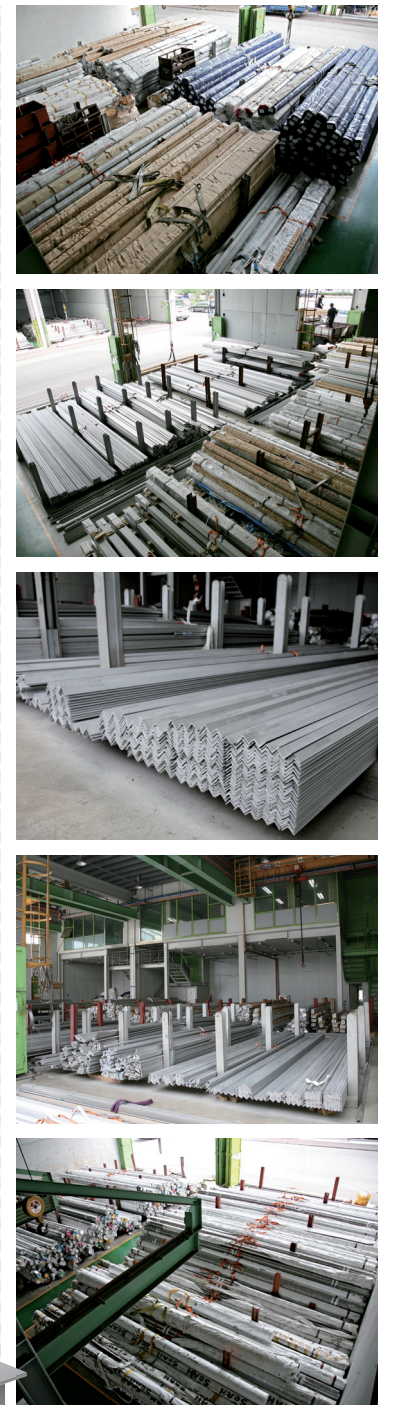
Seoul Office

SEKYUNG METAL Co., Ltd. was founded in 1997 as the specialized in stainless steel profiles, and has been developed into a leading company in stainless steel long products market in Republic of Korea.

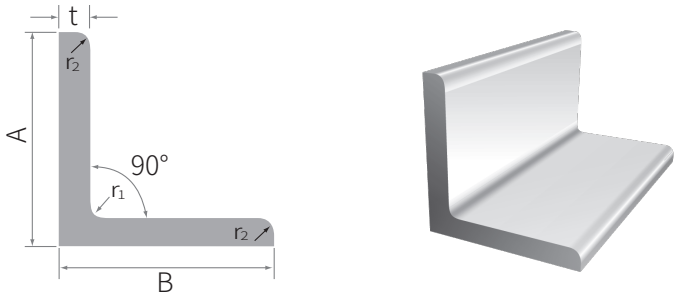
From a variety of stainless steel shapes such as Angle, Channel, H-beam, T-bar, Round to Sheet, Plate, and Pipe, we are providing our customers access to the world renowned makers like Aichi Steel(Toyota Group), Viraj, Tsingshan and so on.

We stock a wide range of stainless steel. We could offer cost-effectively and supply any products in a timely manner as requested for customer satisfaction.

Any idea or suggestion would be welcomed. We value you as always.



Angle

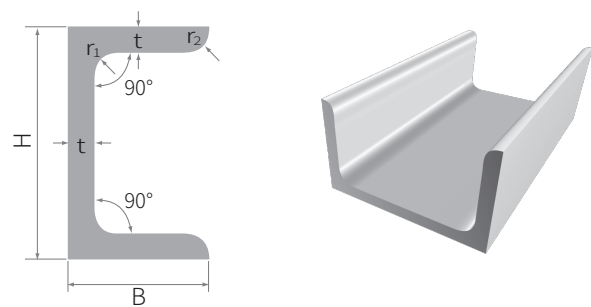


1 Size



Size (mm) A x B x t	r ₁	r ₂	Sectional Area (cm ²)	304			316L			
				Standard Length : 6m			Standard Length : 6m			
				kg/m			kg/m	Origin		
					China	India		AICHI STEEL Japan	India	AICHI STEEL Japan
20 x 20 x 3	4	2	1.13	0.89	●	●	●	0.90	●	●
25 x 25 x 3	4	2	1.43	1.13	●	●	●	1.14	●	●
30 x 30 x 3	4	2	1.73	1.37	●	●	●	1.38	●	●
30 x 30 x 4	4	3	2.24	1.77	●	●	●	1.78	●	●
40 x 40 x 3	4.5	2	2.34	1.85	●	●	●	1.86	●	●
40 x 40 x 4	4.5	3	3.05	2.41	●	●	●	2.43	●	●
40 x 40 x 5	4.5	3	3.76	2.98	●	●	●	3.00	●	●
50 x 50 x 3	6.5	2	2.98	2.35	●	●	●	2.37	●	●
50 x 50 x 4	6.5	3	3.89	3.09	●	●	●	3.11	●	●
50 x 50 x 5	6.5	3	4.80	3.81	●	●	●	3.83	●	●
50 x 50 x 6	6.5	4	5.64	4.48	●	●	●	4.50	●	●
60 x 60 x 6	6.5	4	6.86	5.44	●	●	●	5.48	●	●
60 x 60 x 8	8.5	6	8.96	7.11			●	7.15		●
65 x 65 x 6	8.5	4	7.53	5.97	●	●	●	6.01	●	●
75 x 75 x 6	8.5	4	8.73	6.92	●	●	●	6.96	●	●
75 x 75 x 9	8.5	6	12.69	10.06	●	●	●	10.13	●	●
75 x 75 x 12	8.5	7	16.56	13.14		●	●	13.24	●	●
80 x 80 x 8	8.5	6	12.16	9.64			●	9.70		●
90 x 90 x 10	10	7	17.00	13.48			●	13.57		●
100 x 100 x 6	10	5	11.75	9.32		●	●	9.38	●	●
100 x 100 x 9	10	6	17.25	13.68	●	●	●	13.77	●	●
100 x 100 x 10	10	7	19.00	15.07	●	●	●	15.17	●	●
100 x 100 x 12	10	7	22.56	17.89		●	●	18.01	●	●
150 x 150 x 10	16	8	29.10	23.08		●		23.22	●	
150 x 150 x 12	16	8	34.66	27.48		●		27.66	●	

Channel (Non-Tapered)



1 Size

Size (mm) H x B x t					304		316L		Customized
					Standard Length : 6m		Standard Length : 6m		
					kg/m	Origin	kg/m	Origin	
						AICHI STEEL Japan		AICHI STEEL Japan	
80	x	40	x	5	5.96	●	6.00	●	
100	x	50	x	5	7.62	●	7.67	●	
100	x	50	x	6	8.98	●	9.04	●	
130	x	65	x	6	11.90	●	11.98	●	
150	x	75	x	6	13.80	●	13.89	●	
150	x	75	x	9	20.20	●	20.33	●	
200	x	100	x	10	30.20	●	30.39	●	
Others					-	-	-	-	●

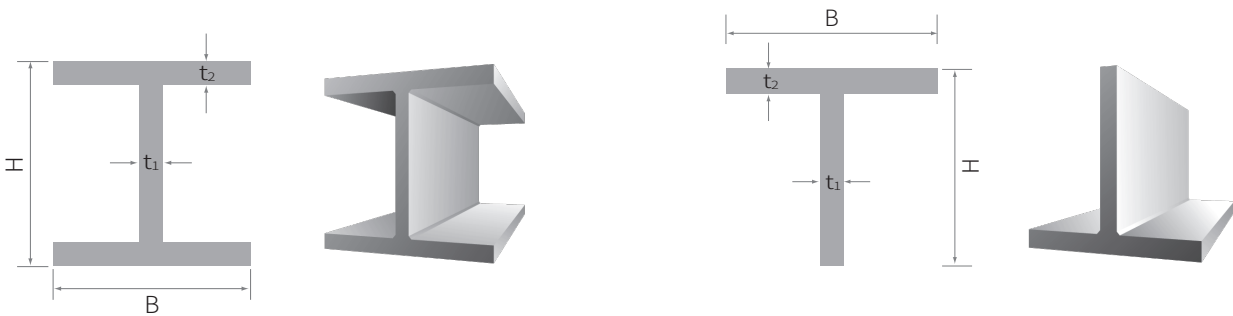
2 AICHI STEEL Tolerance

Width (mm)				Thickness (mm)			
H	Tolerance	B	Tolerance	5	6	9	10
80	±2.0	40	±1.5	±0.6			
100	±2.0	50	±2.0	±0.6	±0.6		
130	±3.0	65	±3.0		±0.6		
150	±2.0	75	±3.0		±0.6	±0.6	
200	±4.0	100	±3.0				±0.6

3 The others

Sqaureness	90° ± 2°
Straightness	Not exceeding 3mm / meter
Length	+ 50 mm, - 0 mm

H-Beam · T-Bar



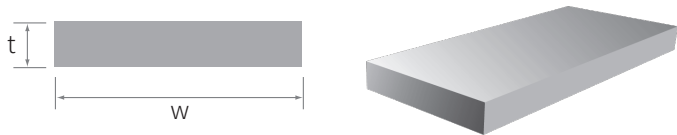
1 Size

Size (mm) H x B x t ₁ / t ₂			Type	304		Customized			
				Standard Length : 6m					
				kg/m	AICHI STEEL Japan				
100	x	100	6	/	8	Welded	17.1	●	
125	x	125	7	/	9		23.7	●	
150	x	150	7	/	10		31.4	●	
200	x	100	6	/	8		21.1	●	
200	x	200	8	/	12		50.4	●	
250	x	250	9	/	14		72.5	●	
Others							-	-	●

2 AICHI STEEL Tolerance

Height (H)	up to 300 mm : ± 2.0 mm over 300 mm : ± 3.0 mm
Width (B)	± 2.0 mm
Sqaureness	1.2% or less of Width B Minimum 2.0 mm
Eccentricity	± 2.0 mm
Straightness	0.20 % or less of over all length
Length	+ 50 mm, - 0 mm

Flat Bar



1 Size

Size (mm) W x t		Length (m)	kg/m	Slitted	Hot Rolled	H/L
15	3	4000	0.36	●		●
	4	4000	0.48	●		●
	5	4000	0.59	●		●
	6	4000	0.71	●		●
20	3	4000	0.48	●		●
	4	4000	0.63	●		●
	5	4000	0.79	●		●
	6	4000	0.95	●		●
	8	6000	1.27	●	●	●
25	10	6000	1.59	●	●	●
	3	4000	0.59	●		●
	4	4000	0.79	●		●
	5	4000	0.99	●		●
	6	4000	1.19	●		●
	8	6000	1.59	●	●	●
	9	6000	1.78	●	●	●
30	10	6000	1.98	●	●	●
	12	6000	2.38	●	●	●
	15	6000	2.97		●	●
	3	4000	0.71	●		●
	4	4000	0.95	●		●
	5	4000	1.19	●		●
40	6	4000	1.43	●		●
	8	6000	1.90	●	●	●
	9	6000	2.14	●	●	●
	10	6000	2.38	●	●	●
	12	6000	2.85	●	●	●
	15	6000	3.57		●	●
	20	6000	4.76		●	●
50	25	6000	5.95		●	●
	3	4000	0.95	●		●
	4	4000	1.27	●		●
60	5	4000	1.59	●		●

Size (mm) t x W		Length (m)	kg/m	Slitted	Hot Rolled	H/L
40	6	4000	1.90	●		●
	8	6000	2.54	●	●	●
	9	6000	2.85	●	●	●
	10	6000	3.17	●	●	●
	12	6000	3.81	●	●	●
	15	6000	4.76		●	●
	16	6000	5.08		●	●
	20	6000	6.34		●	●
	25	6000	7.93		●	●
	30	6000	9.52		●	●
	35	6000	11.10		●	●
50	3	4000	1.19	●		●
	4	4000	1.59	●		●
	5	4000	1.98	●		●
	6	4000	2.38	●		●
	8	6000	3.17	●	●	●
	9	6000	3.57	●	●	●
	10	6000	3.97	●	●	●
	12	6000	4.76	●	●	●
	15	6000	5.95		●	●
	16	6000	6.34		●	●
	20	6000	7.93		●	●
	25	6000	9.91		●	●
	30	6000	11.90		●	●
	35	6000	13.88		●	●
55	40	6000	15.86		●	●
	16	6000	6.98		●	●
60	5	4000	2.38	●		●
	6	4000	2.85	●		●
	8	6000	3.81	●	●	●
	9	6000	4.28	●	●	●
	10	6000	4.76	●	●	●
	12	6000	5.71	●	●	●
70	15	6000	7.14		●	●

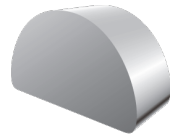
Size (mm) t x W		Length (m)	kg/m	Slitted	Hot Rolled	H/L
60	16	6000	7.61		●	●
	20	6000	9.52		●	●
	25	6000	11.90		●	●
	30	6000	14.27		●	●
	35	6000	16.65		●	●
	40	6000	19.03		●	●
65	6	4000	3.09	●		●
	8	6000	4.12	●	●	●
	9	6000	4.64	●	●	●
	10	6000	5.15	●	●	●
	12	6000	6.19	●	●	●
	15	6000	7.73		●	●
	16	6000	8.25		●	●
	20	6000	10.31		●	●
	25	6000	12.89		●	●
	30	6000	15.46		●	●
	35	6000	18.04		●	●
	40	6000	20.62		●	●
70	8	6000	4.44	●	●	●
	9	6000	5.00	●	●	●
	10	6000	5.55	●	●	●
	12	6000	6.66	●	●	●
	15	6000	8.33		●	●
	20	6000	11.10		●	●
	25	6000	13.88		●	●
	30	6000	16.65		●	●
	35	6000	19.43		●	●
75	6	4000	3.57	●		●
	8	6000	4.76	●	●	●
	9	6000	5.35	●	●	●
	10	6000	5.95	●	●	●

Size (mm) t x W		Length (m)	kg/m	Slitted	Hot Rolled	H/L
75	12	6000	7.14	●	●	●
	15	6000	8.92		●	●
	16	6000	9.52		●	●
	20	6000	11.90		●	●
	25	6000	14.87		●	●
	30	6000	17.84		●	●
80	35	6000	20.82		●	●
	8	6000	3.81	●	●	●
	9	6000	3.17	●	●	●
	10	6000	19.03	●	●	●
	12	6000	0.00	●	●	●
	15	6000	0.00		●	●
	20	6000	0.00		●	●
	25	6000	0.00		●	●
	30	6000	0.00		●	●
	35	6000	0.00		●	●
100	40	6000	0.00		●	●
	3	4000	2.38	●		●
	4	4000	3.17	●		●
	5	4000	3.97	●		●
	6	4000	4.76	●		●
	8	6000	6.34	●	●	●
	9	6000	7.14	●	●	●
	10	6000	7.93	●	●	●
	12	6000	9.52	●	●	●
	15	6000	11.90		●	●
	16	6000	12.69		●	●
	20	6000	15.86		●	●
	25	6000	19.83		●	●
	30	6000	23.79		●	●
	35	6000	27.76		●	●
	40	6000	31.72		●	●

2 ASTM A484 / 484M Tolerance

Width (mm)	Type	Slitted			Hot Rolled / H/L			
		Thickness (mm)			Width (mm)	Thickness (mm)		
		3	4	5 - 6		8 - 13	14 - 25	26 - 40
- 25						± 0.2	± 0.25	-
26 - 50		± 0.25	± 0.35	+ 1.25 - 0.25	+ 2.4 - 0.80	± 0.3	± 0.4	± 0.8
51 - 100						± 0.4	± 0.5	± 0.8

Profile



Half Round

Thickness (mm)	4.0	5.0	6.0	7.0	8.0	9.0	10.0
Width (mm)	6.0 - 32.0	7.0 - 32.0	8.0 - 31.7	9.0 - 31.7	10.0 - 31.7	11.0 - 30.0	12.0 - 25.0



T-Bar (Cold Rolled)

Thickness (mm)	3.0	4.0	5.0	6.0	7.0	8.0	9.0
Width (mm)	6.0 - 25.0	7.0 - 24.0	8.0 - 23.0	9.0 - 22.0	10.0 - 21.0	11.0 - 20.0	12.0 - 20.0



Oval

Thickness (mm)	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
Width (mm)	4.0 - 32.0	5.0 - 31.5	6.0 - 31.0	7.0 - 30.0	8.0 - 29.5	9.0 - 29.0	10.0 - 28.5	11.0 - 28.0



Watch Band

Thickness (mm)	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
Width (mm)	4.0 - 25.0	5.0 - 25.0	6.0 - 24.0	7.0 - 24.0	8.0 - 23.0	9.0 - 23.0	10.0 - 22.0	11.0 - 22.0



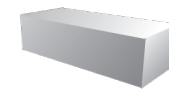
Profile

Thickness (mm)	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
Width (mm)	4.0 - 25.0	5.0 - 25.0	6.0 - 24.0	7.0 - 23.0	8.0 - 22.0	9.0 - 21.0	10.0 - 20.0	11.0 - 20.0



Triangle

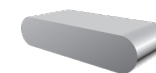
Thickness (mm)	3.0 - 8.0
Width (mm)	4.0 - 16.0



Flat (Cold Rolled)

Thickness (mm)	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
Width (mm)	5.0 - 17	5.0 - 30.0	5.0 - 30.0	6.0 - 30.0	7.0 - 30.0	8.0 - 30.0	9.0 - 20.0	10.0 - 20.0

Thickness (mm)	10.0	11.0	12.0	13.0	14.0	15.0
Width (mm)	11.0 - 20.0	12.0 - 20.0	13.0 - 20.0	14.0 - 19.0	15.0 - 18.0	16.0 - 17.0



Round Edge Flat

Thickness (mm)	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
Width (mm)	5.0 - 17.0	5.0 - 30.0	6.0 - 30.0	7.0 - 30.0	8.0 - 32.0	9.0 - 30.0	10.0 - 20.0	11.0 - 20.0

Thickness (mm)	10.0	11.0	12.0	13.0	14.0	15.0	16.0
Width (mm)	12.0 - 20.0	13.0 - 20.0	14.0 - 25.0	15.0 - 25.5	16.0 - 25.0	17.0 - 25.0	18.0 - 25.5

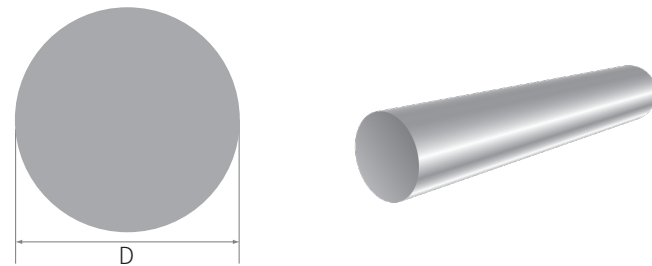


Compression Bar

Roundness (R)	8	10	11
Thickness (mm)	15 - 16	19 - 20	21 - 22
Width (mm)	32 - 102	40 - 80	35 - 102

3 Round Bar

Round Bar



1 Size

Type	Size (mm)	Tolerance
Cold Drawn Bar	3 ≤ D < 25	h9
Peeled Bar	25 ≤ D ≤ 100	h11
	100 < D ≤ 500	DIN1013

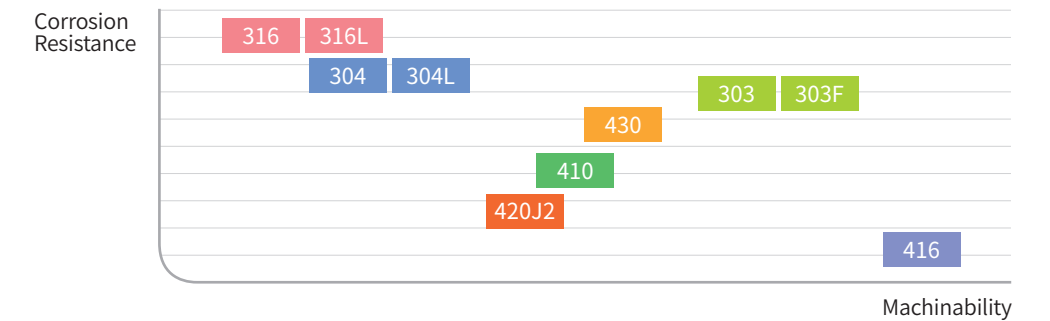
2 Grade · Specific Gravity · Weight

Grade	Specific Gravity	Weight (kg/m)
303, 303F, 304, 304L	7.93	$D \times D \times 0.7854 \times S.G \div 1000$
316, 316L, 630	7.98	
410 / 420J2	7.75	

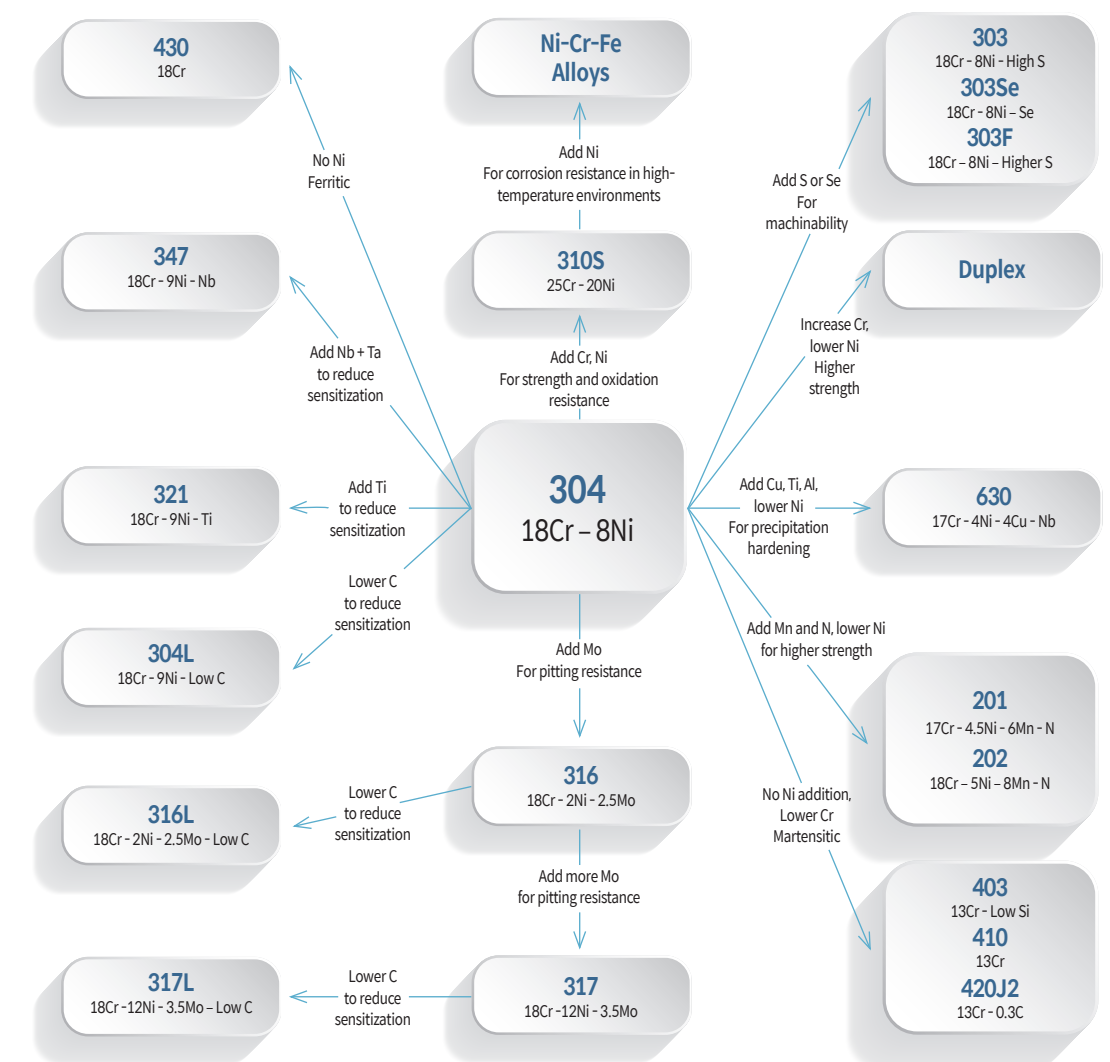
3 ISO 286-2 Tolerance

Size	Grade	h6	h7	h8	h9	h10	h11	h12	h13
D ≤ 3		0	0	0	0	0	0	0	0
		-0.006	-0.010	-0.014	-0.025	-0.040	-0.060	-0.100	-0.140
3 < D ≤ 6		0	0	0	0	0	0	0	0
		-0.008	-0.012	-0.018	-0.030	-0.048	-0.075	-0.120	-0.180
6 < D ≤ 10		0	0	0	0	0	0	0	0
		-0.009	-0.015	-0.022	-0.036	-0.058	-0.090	-0.150	-0.220
10 < D ≤ 18		0	0	0	0	0	0	0	0
		-0.011	-0.018	-0.027	-0.043	-0.070	-0.110	-0.180	-0.270
18 < D ≤ 30		0	0	0	0	0	0	0	0
		-0.013	-0.021	-0.033	-0.052	-0.084	-0.130	-0.210	-0.330
30 < D ≤ 50		0	0	0	0	0	0	0	0
		-0.016	-0.025	-0.039	-0.062	-0.100	-0.160	-0.250	-0.390
50 < D ≤ 80		0	0	0	0	0	0	0	0
		-0.019	-0.030	-0.046	-0.074	-0.120	-0.190	-0.300	-0.460
80 < D ≤ 120		0	0	0	0	0	0	0	0
		-0.022	-0.035	-0.054	-0.087	-0.140	-0.220	-0.350	-0.540
120 < D ≤ 180		0	0	0	0	0	0	0	0
		-0.025	-0.040	-0.063	-0.100	-0.160	-0.250	-0.400	-0.630
180 < D ≤ 250		0	0	0	0	0	0	0	0
		-0.029	-0.046	-0.072	-0.115	-0.185	-0.290	-0.460	-0.720
250 < D ≤ 315		0	0	0	0	0	0	0	0
		-0.032	-0.052	-0.081	-0.130	-0.210	-0.320	-0.520	-0.810
315 < D ≤ 400		0	0	0	0	0	0	0	0
		-0.036	-0.057	-0.089	-0.140	-0.230	-0.360	-0.570	-0.890
400 < D ≤ 500		0	0	0	0	0	0	0	0
		-0.040	-0.063	-0.097	-0.155	-0.250	-0.400	-0.630	-0.970

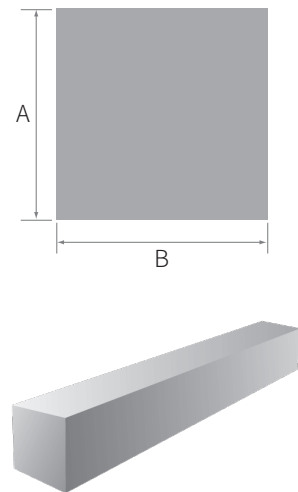
4 Grade Comparison



5 Composition and Property Linkages in Stainless steel



Square Bar



① Size

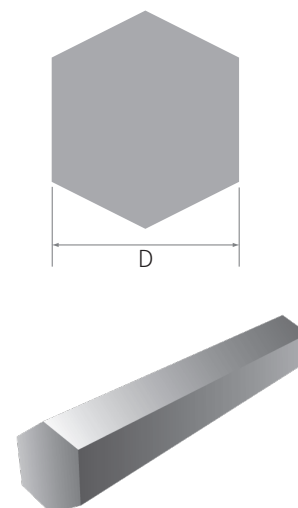
Size (mm) A = B	Length (m) 304/316L	kg/m	
		304	316L
4	4	0.13	0.13
5	4	0.20	0.20
6	4	0.29	0.29
8	4	0.51	0.51
10	4	0.79	0.80
12	4	1.14	1.15
14	6	1.55	1.56
15	6	1.78	1.80
16	6	2.03	2.04
19	6	2.86	2.88
20	6	3.17	3.19
22	6	3.84	3.86
25	6	4.96	4.99
25.4	6	5.12	5.15
30	6	7.14	7.18
32	6	8.12	8.17
35	6	9.71	9.78
38	6	11.45	11.52
40	6	12.69	12.77
45	6	16.06	16.16
50	6	19.83	19.95
55	6	23.99	24.14
60	6	28.55	28.73

Size (mm) A = B	Length (m) 304/316L	kg/m	
		304	316L
65	6	33.50	33.72
70	6	38.86	39.10
75	6	44.61	44.89

② Tolerance

Size	Grade	h11
3.01 - 6.00		0
		- 0.075
6.01 - 10.00		0
		- 0.090
10.01 - 18.00		0
		- 0.110
18.00 - 30.00		0
		- 0.130
30 - 50		0
		- 0.160
50 - 80		0
		- 0.190

Hexagon Bar



① Size

Size (mm) D	Length (m)				kg/m	
	303	304	316L	303/304	316L	
5	2.5	4	4	0.17	0.17	
6	2.5	4	4	0.25	0.25	
7	2.5	4	4	0.34	0.34	
8	2.5	4	4	0.44	0.44	
10	2.5	4	4	0.69	0.69	
11	2.5	4	4	0.83	0.84	
12	2.5	4	4	0.99	1.00	
12.7	2.5	4	4	1.11	1.11	
13	2.5	4	4	1.16	1.17	
14	2.5	4	4	1.35	1.35	
17	2.5	4	4	1.99	2.00	
19	2.5	4	4	2.48	2.49	
22	2.5	4	4	3.33	3.34	
24	2.5	4	4	3.96	3.98	
25.4	2.5	4	4	4.43	4.46	
27	2.5	4	4	5.01	5.04	
30	2.5	6	6	6.18	6.22	
32	6	6	6	7.03	7.08	
36	6	6	6	8.90	8.96	
38	6	6	6	9.92	9.98	
41	6	6	6	11.55	11.62	
46	6	6	6	14.54	14.62	
50	6	6	6	17.18	17.28	
50.8	6	6	6	17.73	17.83	

② Tolerance

Size	Grade	h11
5 - 6		0
		- 0.075
7 - 10		0
		- 0.090
11 - 17		0
		- 0.110
19 - 30		0
		- 0.130
32 - 50		0
		- 0.160
50.8 -		0
		- 0.190

Sheet · Plate

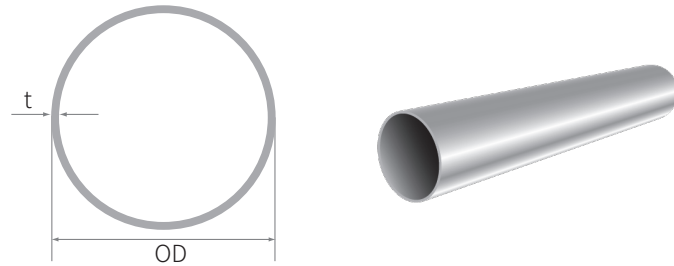
① Sheet Size

Size (mm) Grade Thick	1,000 × 2,000		1,219 × 2,438		1,524 × 3,048	
	304	316L	304	316L	304	316L
0.5	7.93	7.98	11.78	11.86	18.42	18.53
0.6	9.52	9.58	14.14	14.23	22.10	22.24
0.7	11.10	11.17	16.50	16.60	25.79	25.95
0.8	12.69	12.77	18.85	18.97	29.47	29.65
0.9	14.27	14.36	21.21	21.34	33.15	33.36
1.0	15.86	15.96	23.57	23.72	36.84	37.07
1.2	19.03	19.15	28.28	28.46	44.20	44.48
1.5	23.79	23.94	35.35	35.57	55.25	55.60
2.0	31.72	31.92	47.13	47.43	73.67	74.14
2.5	39.65	39.90	58.92	59.29	92.09	92.67
3.0	47.58	47.88	70.70	71.15	110.51	111.20
3.2	50.75	51.07	75.42	75.89	117.88	118.62
3.5	55.51	55.86	82.49	83.01	128.93	129.74
4.0	63.44	63.84	94.27	94.86	147.34	148.27
4.5	71.37	71.82	106.05	106.72	165.76	166.81
5.0	79.30	79.80	117.84	118.58	184.18	185.34
6.0	95.16	95.76	141.40	142.30	221.02	222.41
7.0	111.02	111.72	164.97	166.01	257.85	259.48
8.0	126.88	127.68	188.54	189.73	294.69	296.55
9.0	142.74	143.64	212.11	213.44	331.52	333.61
10	158.60	159.60	235.67	237.16	368.36	370.68
12	190.32	191.52	282.81	284.59	442.03	444.82
13	206.18	207.48	306.38	308.31	478.87	481.89
14	222.04	223.44	329.94	332.02	515.70	518.96
15	237.90	239.40	353.51	355.74	552.54	556.02
16	253.76	255.36	377.08	379.46	589.38	593.09
18	285.48	287.28	424.21	426.89	663.05	667.23
20	317.20	319.20	471.35	474.32	736.72	741.37
22	348.92	351.12	518.48	521.75	810.39	815.50
25	396.50	399.00	589.18	592.90	920.90	926.71
28	444.08	446.88	659.89	664.05	1031.41	1037.91
30	475.80	478.80	707.02	711.48	1105.08	1112.05
32	507.52	510.72	754.15	758.91	1178.75	1186.19
35	555.10	558.60	824.86	830.06	1289.26	1297.39
38	602.68	606.48	895.56	901.21	1399.77	1408.60
40	634.40	638.40	942.69	948.64	1473.44	1482.73
45	713.70	718.20	1060.53	1067.22	1657.62	1668.07
50	793.00	798.00	1178.37	1185.80	1841.80	1853.42

② Plate Size

Size (mm) Grade Thick	1,524 × 6,096		2,000 × 6,000		2,500 × 6,000	
	304	316L	304	316L	304	316L
9	663.05	667.23	856.44	861.84	1070.55	1077.30
10	736.72	741.37	951.60	957.60	1189.50	1197.00
12	884.07	889.64	1141.92	1149.12	1427.40	1436.40
13	957.74	963.78	1237.08	1244.88	1546.35	1556.10
14	1031.41	1037.91	1332.24	1340.64	1665.30	1675.80
15	1105.08	1112.05	1427.40	1436.40	1784.25	1795.50
16	1178.75	1186.19	1522.56	1532.16	1903.20	1915.20
18	1326.10	1334.46	1712.88	1723.68	2141.10	2154.60
20	1473.44	1482.73	1903.20	1915.20	2379.00	2394.00
22	1620.79	1631.01	2093.52	2106.72	2616.90	2633.40
25	1841.80	1853.42	2379.00	2394.00	2973.75	2992.50
28	2062.82	2075.83	2664.48	2681.28	3330.60	3351.60
30	2210.16	2224.10	2854.80	2872.80	3568.50	3591.00
32	2357.51	2372.37	3045.12	3064.32	3806.40	3830.40
35	2578.52	2594.78	3330.60	3351.60	4163.25	4189.50
38	2799.54	2817.19	3616.08	3638.88	4520.10	4548.60
40	2946.88	2965.47	3806.40	3830.40	4758.00	4788.00
45	3315.24	3336.15	4282.20	4309.20	5352.75	5386.50
50	3683.61	3706.83	4758.00	4788.00	5947.50	5985.00
55	4051.97	4077.51	5233.80	5266.80	6542.25	6583.50
60	4420.33	4448.20	5709.60	5745.60	7137.00	7182.00
65	4788.69	4818.88	6185.40	6224.40	7731.75	7780.50
70	5157.05	5189.56	6661.20	6703.20	8326.50	8379.00
80	5893.77	5930.93	7612.80	7660.80	9516.00	9576.00
90	6630.49	6672.30	8564.40	8618.40	10705.50	10773.00
100	7367.21	7413.66	9516.00	9576.00	11895.00	11970.00

Pipe



1 Pipes (KS D-3576, JIS G-3459, ASTM A-312)

Nominal		OD (mm)		5S			10S			20S		40S			80S		
A	B	KS/JIS	ASTM	Thick (mm)		kg/m 304/L	Thick (mm)		kg/m 304/L	Thick (mm)	kg/m 304/L	Thick (mm)		kg/m 304/L	Thick (mm)		kg/m 304/L
				KS/JIS	ASTM		KS/JIS	ASTM				KS/JIS	ASTM		KS/JIS	ASTM	
6	1/8	10.5	10.29	1	-	0.237	1.2	1.24	0.278	1.5	0.336	1.7	1.73	0.373	2.4	2.41	0.484
8	1/4	13.8	13.72	1.2	-	0.377	1.65	1.65	0.499	2	0.588	2.2	2.24	0.636	3	3.02	0.807
10	3/8	17.3	17.15	1.2	-	0.481	1.65	1.65	0.643	2	0.762	2.3	2.31	0.859	3.2	3.20	1.12
15	1/2	21.7	21.34	1.65	1.65	0.824	2.1	2.11	1.03	2.5	1.20	2.8	2.77	1.32	3.7	3.73	1.66
20	3/4	27.2	26.67	1.65	1.65	1.05	2.1	2.11	1.31	2.5	1.54	2.9	2.87	1.76	3.9	3.91	2.26
25	1	34	33.40	1.65	1.65	1.33	2.8	2.77	2.18	3	2.32	3.4	3.38	2.59	4.5	4.55	3.31
32	1 ¼	42.7	42.16	1.65	1.65	1.69	2.8	2.77	2.78	3	2.97	3.6	3.56	3.51	4.9	4.85	4.61
40	1 ½	48.6	48.26	1.65	1.65	1.93	2.8	2.77	3.19	3	3.41	3.7	3.68	4.14	5.1	5.08	5.53
50	2	60.5	60.33	1.65	1.65	2.42	2.8	2.77	4.02	3.5	4.97	3.9	3.91	5.50	5.5	5.54	7.54
65	2 ½	76.3	73.03	2.1	2.11	3.88	3	3.05	5.48	3.5	6.35	5.2	5.16	9.21	7	7.01	12.10
80	3	89.1	88.90	2.1	2.11	4.55	3	3.05	6.43	4	8.48	5.5	5.49	11.5	7.6	7.62	15.4
90	3 ½	101.6	101.60	2.1	2.11	5.20	3	3.05	7.37	4	9.72	5.7	5.74	13.6	8.1	8.08	18.9
100	4	114.3	114.30	2.1	2.11	5.87	3	3.05	8.32	4	11.0	6	6.02	16.2	8.6	8.56	22.6
125	5	139.8	141.30	2.8	2.77	9.56	3.4	3.40	11.60	5	16.8	6.6	6.55	21.9	9.5	9.52	30.8
150	6	165.2	168.28	2.8 3	2.77	11.3	3.4	3.40	13.70	5	20.0	7.1	7.11	28.0	11	10.97	42.3
200	8	216.3	219.08	2.8 3	2.77	14.9	4	3.76	21.20	6.5	34.0	8.2	8.18	42.5	12.7	12.7	64.4

2 Tolerance

Standard		KS D-3576 / JIS G-3459		ASTM A-312	
Category					
Tol.	OD	OD < 30	± 0.3	10.29 ≤ OD ≤ 48.26	+ 0.4 / - 0.8
				48.26 < OD ≤ 114.3	± 0.8
		OD ≥ 30	± 1%	114.3 < OD ≤ 219.08	+ 1.6 / - 0.8
				219.08 < OD ≤ 457.2	+ 2.4 / - 0.8
	Thick	t < 2	± 0.2	All sizes	- 12.50%
		t ≥ 2	± 10%		
	Length	Longer than indicated		+ 6 / 0 from the indicated length	
Straightness		Reasonably straight		Reasonably straight	

3 Pipes for Machinery and Structure (KS D-3536, JIS G-3446)

Thick		Inch mm	0.2 0.5	0.24 0.6	0.28 0.7	0.32 0.8	0.35 0.9	0.4 1	0.43 1.1	0.49 1.2	0.59 1.5	0.78 2	0.118 3
OD	Inch mm												
1/2	9.6		0.113	0.135	0.155	0.175	0.195	0.214	0.233				
	12.7		0.152	0.181	0.209	0.237	0.265	0.291	0.318	0.344	0.418		
	14.0		0.168	0.200	0.232	0.263	0.294	0.324	0.353	0.383	0.467		
5/8	15.8		0.191	0.227	0.263	0.299	0.334	0.369	0.403	0.436	0.534	0.688	
	19.1		0.232	0.277	0.321	0.365	0.408	0.451	0.493	0.535	0.658	0.852	
3/4	21.7		0.264	0.315	0.366	0.416	0.466	0.516	0.564	0.613	0.755	0.981	1.397
	22.3		0.272	0.324	0.377	0.428	0.480	0.531	0.581	0.631	0.777	1.011	1.442
1	25.4		0.310	0.371	0.431	0.490	0.549	0.628	0.666	0.723	0.893	1.166	1.674
	27.2		0.333	0.398	0.462	0.526	0.590	0.653	0.715	0.777	0.960	1.255	1.808
1 1/4	31.8		0.390	0.466	0.542	0.618	0.693	0.767	0.841	0.915	1.132	1.485	2.152
	34.0		0.417	0.499	0.581	0.662	0.742	0.822	0.901	0.980	1.214	1.594	2.317
1 1/2	38.1		0.468	0.560	0.652	0.743	0.834	0.924	1.014	1.103	1.368	1.799	2.623
	42.7		0.526	0.629	0.732	0.835	0.937	1.039	1.140	1.241	1.539	2.028	2.967
1	45.0					0.881	0.989	1.096	1.203	1.309	1.625	2.142	3.139
	48.6					0.953	1.069	1.186	1.302	1.417	1.760	2.322	3.408
	50.8					0.996	1.119	1.241	1.362	1.483	1.842	2.431	3.572
2 1/2	60.5					1.190	1.336	1.482	1.628	1.773	2.205	2.914	4.297
	63.5					1.249	1.403	1.557	1.710	1.862	2.317	3.064	4.521
	76.3					1.505	1.690	1.876	2.061	2.245	2.795	3.702	5.478
3	89.1					1.760	1.997	2.195	2.411	2.628	3.273	4.339	6.434
	95.5					1.887	2.120	2.353	2.588	2.818	3.512	4.658	6.913
	101.6					2.009	2.258	2.506	2.754	3.001	3.740	4.962	7.368
4 1/2	114.3					2.262	2.542	2.822	3.102	3.381	4.215	5.595	8.317
	127.0							3.139	3.450	3.760	4.689	6.228	9.266
6	152.4							3.761	4.134	4.507	5.623	7.473	11.134
	165.2										6.109	8.120	12.106
6 1/2	216.3											10.676	15.939

4 Square Pipes for Machinery and Structure (KS D-3536, JIS G-3446)

Thick		0.7	0.8	0.9	1	1.1	1.2	1.5	2	3
OD										
10 x 10										
12 x 12		0.263	0.299	0.334	0.369	0.403	0.436			
15 x 15	10 x 20	0.321	0.365	0.408	0.451	0.493	0.535	0.658	0.852	
20 x 20	10 x 30	0.431	0.490	0.549	0.608	0.666	0.723	0.893	1.166	
25 x 25	20 x 30	0.542	0.618	0.693	0.767	0.841	0.915	1.132	1.485	
30 x 30	20 x 40	0.652	0.743	0.834	0.924	1.014	1.103	1.368	1.799	
40 x 40	30 x 50			1.119	1.241	1.362	1.483	1.842	2.431	3.572
50 x 50	40 x 60			1.403	1.557	1.71	1.862	2.317	3.064	4.521
60 x 60	40 x 80			1.69	1.876	2.061	2.245	2.795	3.702	5.478
70 x 70	40 x 100					2.411	2.628	3.273	4.339	6.434
75 x 75	50 x 100					2.6	2.834	3.531	4.683	6.95
80 x 80	60 x 100			2.258	2.506	2.754	3.001	3.74	4.962	7.368
100 x 100	80 x 120					3.45	3.76	4.689	6.228	9.267
120 x 120	100 x 140							5.638	7.493	11.165
130 x 130								6.117	8.131	12.121

Chemical Composition and Technical Properties

Classification	Grade	Standards	Remarks		Chemical Composition										Technical Properties								
			Condition	Diameter	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Other	YS(N/mm ²)	T.S(N/mm ²)	EL	RA(%)	HV	HRC	HBW		
	303	KS/JIS			≤ 0.15	≤ 1.00	≤ 2.00	≤ 0.20	0.15 ≤	8.0 - 10.0	17.0 - 19.0	*(a)	-	-	205 ≤	520 ≤	40 ≤	50 ≤	≤ 200	-	≤ 187		
		ASTM			≤ 0.15	≤ 1.00	≤ 2.00	≤ 0.20	0.15 ≤	8.0 - 10.0	17.0 - 19.0	-	-	-	-	-	-	-	-	-	-		
	303F	EN		≤ 0.1	≤ 1.00	≤ 2.00	≤ 0.045	0.15 - 0.35	8.0 - 10.0	17.0 - 19.0	-	*(d)	N : ≤ 0.1	190 ≤	500 - 750	35 ≤	-	-	-	≤ 230			
		KS/JIS		≤ 0.15	≤ 1.00	≤ 3.50	≤ 0.20	0.30 - 0.35	8.0 - 10.0	17.0 - 19.0	*(a)	-	-	205 ≤	520 ≤	40 ≤	50 ≤	≤ 200	-	≤ 187			
	304	KS/JIS		≤ 0.08	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.030	8.0 - 10.5	18.0 - 20.0	-	-	-	205 ≤	515 ≤	40 ≤	60 ≤	≤ 200	-	≤ 187			
		ASTM		≤ 0.08	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.030	8.0 - 11.0	18.0 - 20.0	-	-	-	310 ≤	620 ≤	30 ≤	40 ≤	-	-	-			
		EN		≤ 0.07	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.030*(c)	8.0 - 10.5	17.5 - 19.5	-	-	N : ≤ 0.1	190 ≤	500 - 700	45 ≤	-	-	-	≤ 215			
		KS/JIS		≤ 0.03	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.030	9.0 - 13.0	18.0 - 20.0	-	-	-	175 ≤	480 ≤	40 ≤	60 ≤	≤ 200	-	≤ 187			
Austenite	304L	ASTM		≤ 0.03	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.030	8.0 - 12.0	18.0 - 20.0	-	-	-	-	-	-	-	-	-	-	-		
		EN		≤ 0.03	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.030	8.0 - 10.5	17.5 - 19.5	-	-	N : ≤ 0.1	175 ≤	500 - 700	45 ≤	-	-	-	≤ 215			
	316	KS/JIS		≤ 0.08	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.030	10.0 - 14.0	16.0 - 18.0	2.0 - 3.0	-	-	205 ≤	520 ≤	40 ≤	60 ≤	≤ 200	-	≤ 187			
		ASTM		≤ 0.08	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.030	10.0 - 14.0	16.0 - 18.0	2.0 - 3.0	-	-	205 ≤	515 ≤	40 ≤	50 ≤	-	-	-			
	316L	EN		≤ 0.07	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.030*(c)	10.0 - 13.0	16.5 - 18.5	2.0 - 2.5	-	N : ≤ 0.1	200 ≤	500 - 700	40 ≤	-	-	-	≤ 215			
		KS/JIS		≤ 0.03	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.030	12.0 - 15.0	16.0 - 18.0	2.0 - 3.0	-	-	175 ≤	480 ≤	40 ≤	60 ≤	≤ 200	-	≤ 187			
	316L	ASTM		≤ 0.03	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.030	10.0 - 14.0	16.0 - 18.0	2.0 - 3.0	-	-	310 ≤	620 ≤	30 ≤	40 ≤	-	-	-			
		EN		≤ 0.03	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.030	10.0 - 13.0	16.5 - 18.5	2.0 - 2.5	-	N : ≤ 0.1	200 ≤	500 - 700	40 ≤	-	-	≤ 215				
410	ASTM	410		0.08 - 0.15	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	-	11.5 - 13.5	-	-	-	345 ≤	540 ≤	25 ≤	55 ≤	-	-	≤ 159			
				EN	≤ 0.15	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	11.5 - 13.5	-	-	275 ≤	480 ≤	16 ≤	45 ≤	-	-	-				
		410		0.08 - 0.15	≤ 1.00	≤ 1.50	≤ 0.040	≤ 0.030*(c)	0.75	11.5 - 13.5	-	-	-	620 ≤	830 ≤	12 ≤	40 ≤	-	-	≤ 220			
				EN	≤ 0.08 - 0.15	≤ 1.00	≤ 1.50	≤ 0.040	≤ 0.030	11.5 - 13.5	-	-	450 ≤	650 - 850	15 ≤	-	-	-	≤ 220				
Martensite	416	KS/JIS		≤ 0.15	≤ 1.00	≤ 1.25	≤ 0.060	0.15 ≤	*(b)	12.0 - 14.0	-	-	-	345 ≤	540 ≤	17 ≤	45 ≤	-	-	≤ 159			
		ASTM		≤ 0.15	≤ 1.00	≤ 1.25	≤ 0.060	0.15 ≤	-	12.0 - 14.0	-	-	-	-	-	-	-	-	-	-			
		416		0.06 - 0.15	≤ 1.00	≤ 1.50	≤ 0.040	0.15 - 0.35	-	12.0 - 14.0	≤ 0.60	-	-	450 ≤	650 - 850	15 ≤	-	-	-	≤ 220			
				EN	≤ 0.16 - 0.25	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	*(b)	12.0 - 14.0	-	-	440 ≤	640 ≤	20 ≤	50 ≤	-	-	≤ 217			
420	ASTM	420		≤ 0.15	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	*(b)	12.0 - 14.0	-	-	-	540 ≤	740 ≤	12 ≤	40 ≤	-	-	≤ 217			
				EN	≤ 0.15	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	-	12.0 - 14.0	-	-	-	-	-	-	-	-	≤ 255			
		420		0.26 - 0.35	≤ 1.00	≤ 1.50	≤ 0.040	≤ 0.030*(c)	-	12.0 - 14.0	-	-	-	650 ≤	850 - 1000	10 ≤	-	-	-	-			
				EN	≤ 0.07	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	3.0 - 5.0	15.0 - 17.5	-	-	-	-	-	-	-	-	-	-		
Precipitation Hardening	630	KS/JIS		≤ 0.07	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	3.0 - 5.0	15.0 - 17.5	-	3.0 - 5.0	Nb(Cb) : 0.15 - 0.45	1175 ≤	1310 ≤	10 ≤	40 ≤	-	≤ 38	≤ 363			
				EN	≤ 0.07	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	3.0 - 5.0	15.0 - 17.5	-	-	-	-	-	-	-	-	≤ 38	≤ 363		
		630		≤ 0.07	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	3.0 - 5.0	15.0 - 17.5	-	-	-	1000 ≤	1070 ≤	12 ≤	45 ≤	-	40 ≤	≤ 375			
				EN	≤ 0.07	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	3.0 - 5.0	15.0 - 17.5	-	-	-	860 ≤	1000 ≤	13 ≤	45 ≤	-	35 ≤	≤ 331		
	630	ASTM		≤ 0.07	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	3.0 - 5.0	15.0 - 17.5	-	-	-	725 ≤	930 ≤	16 ≤	50 ≤	-	28 ≤	≤ 277			
				EN	≤ 0.07	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	3.0 - 5.0	15.0 - 17.5	-	-	-	1170 ≤	1310 ≤	10 ≤	35 ≤	-	40 ≤	≤ 363		
		630		≤ 0.07	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	3.0 - 5.0	15.0 - 17.5	-	-	-	1070 ≤	1170 ≤	10 ≤	38 ≤	-	38 ≤	≤ 375			
				EN	≤ 0.07	≤ 1.00	≤ 1.00	≤ 0.040	≤ 0.030	3.0 - 5.0	15.0 - 17.5	-	-	-	1000 ≤	1070 ≤	12 ≤	45 ≤	-	35 ≤	≤ 331		

(a) : Molybdenum may be added up to 0.60%
(b) : Nickel may be added up to 0.60%
(c) : For bars, rods, wire, sections, bright products and the relevant semi-finished products, a maximum content of 0.030% S applies.
(d) : For cold heading and cold extruding, a C-content of max. 1.0% is permitted.

Reference)

1. Chemical Composition - KS D 3706-2018, ASTM A276-08a, ASME/ASME-M-05, EN 10088-1:2014
2. Technical Properties - KS D 3706-2018, ASTM A276-08a, ASME/ASME-M-05, EN 10088-3:2014

Hardness Conversion Chart

Sorted by HV

Viker's Hardness (HV)	Brinell Hadrness (HB) 10mm ball, 3,000kgf			Rockwell Hadrness (HR)				Shore Hardness (HS)	Tensile Strength	
	Standard ball (HBS)	Hultgren ball	Tungsten-carbide ball (HBW)	A Scale 60kg Brale	B Scale 100kg	C Scale 250kg Brale	D Scale 100kg Brale		Austenitic stainless steel (MPa, N/mm ²)	Chromium stainless (MPa, N/mm ²)
600	-	550	564	78.6	-	55.2	67.0	74	2401	-
590	-	542	554	78.4	-	54.7	66.7	72	2312.8	-
580	-	535	545	78.0	-	54.1	66.2			
570	-	527	535	77.8	-	53.6	65.8			
560	-	519	525	77.4	-	53.0	65.4	71	2224.6	-
550	505	512	517	77.0	-	52.3	64.8			
540	496	503	507	76.7	-	51.7	64.4	69	2136.4	-
530	488	495	497	76.4	-	51.1	63.9			
520	480	487	488	76.1	-	50.5	63.5	67	2048.2	-
510	473	479	479	75.7	-	49.8	62.9			
500	465	471	471	75.3	-	49.1	62.2		1960	-
490	456	460	460	74.9	-	48.4	61.6			
480	448	452	452	74.5	-	47.7	61.3	64	1852.2	-
470	441	442	442	74.1	-	46.9	60.7			
460	433	433	433	73.6	-	46.1	60.1	62	1744.4	-
450	425	425	425	73.3	-	45.3	59.4			
440	415	415	415	72.8	-	44.5	58.8	59	1636.6	-
430	405	405	405	72.3	-	43.6	58.2			
420	397	397	397	71.8	-	42.7	57.5	57	1528.8	-
410	388	388	388	71.4	-	41.8	56.8			
400	379	379	379	70.8	-	40.8	56.0	55	1421	1313.2
390	369	369	369	70.3	-	39.8	55.2			
380	360	360	360	69.8	(110.1)	38.8	54.4	52	1332.8	1244.6
370	350	350	350	69.2		37.7	53.6			
360	341	341	341	68.7	(109.0)	36.6	52.8	50	1244.6	1176
350	331	331	331	68.1		35.5	51.9			
340	322	322	322	67.6	(108.0)	34.4	51.1	47	1156.4	1107.4
330	313	313	313	67.0		33.3	50.2			
320	303	303	303	66.4	(107.0)	32.2	49.4	45	1068.2	1038.8
310	294	294	294	65.8		31.0	48.4			
300	284	284	284	65.2	(105.5)	29.8	47.5	42	980	-
295	280	280	280	64.8		29.2	47.1			
290	275	275	275	64.5	(104.5)	28.5	46.5	41	950.6	



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