



Technical Handbook of Ferrous & Non-Ferrous Metals



B.M. PATEL

09322697885 / 09869999947
syndicatebm@gmail.com

C.B.PATEL

09323888885
syndicatecb@gmail.com



SYNDICATE Metal & Alloys

IMPORTERS • STOCKIST • MFG OF :

Suppliers of : Stainless Steel, Carbon Steel, Tubes, Pipes & Pipe Fittings, Sheet, Plates, Rods, Ferrous & Non Ferrous Metals

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

Factory : B-13, Gayatri Industrial Estate, Bhikshukgruh Road, Odhav, Ahmedabad - 382 415 (Guj.)

Godown : Plot No. 32 A , 26,Asmita Co-Op HSG SOC. Ltd, Sector-12, Kharghar Navi Mumbai-410210 (Mah.)



SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.
TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetal.in • Website : www.syndicatemetal.in

Product Range

Pipes:

Types: Round, Square, Rectangular.
Size: 6mm OD & Above. (Welded & Seamless)
Wall Thickness: 0.5mm & Above.

Coils:

Surface: 2B, 2D, BA, HL, No.4
Thickness: 0.31 mm ~ 10 mm
Width: 1000 mm / 1220 mm / 1525 mm / 2000 mm

Butt Weld Fittings:

Types: Elbow, Tee, Reducer, Return Bends, Stub-Ends, Cap, Collar, Cross, Insert etc.
Size: 1/4" NB TO 32" NB.
(Welded & Seamless)
Wall Thickness: Sch. 5S To Sch. XXS.

Flanges:

Types: Weldneck, Slipon, Blind, Socket Weld, Lap Joint, Spectacles, Ring Joint, Orifice, Long Weldneck, Deck Flange, etc.
Size: 1/2" NB TO 24" NB.
Class: 150#, 300#, 400#, 600#, 900#, 1500# & 2500#.

Screwed & Forged Fittings:

Types: Elbow, Tee, Union, Cross, Coupling, Bushing, Plug, Swage Nipples, Welding Boss, Street Elbow, Hexagon Nut, Bend, Adapter, Insert, Weldolet, Elbowlet, Sockolet, Thredolet, Nipolet, Letrolet, etc.
Size: 1/4" NB TO 4" NB. (Socketweld & Threaded)
Class: 3000#, 6000#, 9000#.

Fasteners:

Types: Bolts, Nuts, Washers, Anchor Fasteners, Stud Bolts, Eye Bolt, Stud, Threaded Rod, Cotter Pin, Socket Screw, Fine Fasteners & Spares, Foundation Fasteners, etc.
Other: Alloy Steel: 4.6, 5.6, 6.6, 8.8, 10.9 & 12.9/R, 'S', 'T' Conditions.

Sheets & Plates:

Stainless Steel Sheets:

Thickness: 0.25mm & above
Width: 6mm ~ 2000mm
Length: 1000mm ~ 1000mm
Rods: 6mm & above

Stainless Steel Plates:

Thickness: 3mm & above
Width: 1000mm to 3200mm
Length: 2438mm / 3048mm / 6096mm to 13500mm

**All our products are
as per the
National & International
standards**



SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.
TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

INTRODUCTION

To,
The Purchase Manager,

(Subject : Registration as suppliers of Ferrous & Non-Ferrous Metals in your vendor list)

Dear Sir / Madam,

We introduce ourselves as a leading manufacturer, Stockists & Suppliers of Ferrous & Non-Ferrous Metals which are required by your company in all aspects of projects implementation, Maintenance, Modernization and shut down application etc.

Our product line is as under :

PIPE FITTING

We Manufacture Stainless Steel, Carbon Steel & Alloy Steel, Butt-weld, Seamless & Welded Fitting like Elbow, Tee, Reducer, Stubend, U Bend, Radius Bends, Nipples, Dary Fitting etc and also as per your requirement. Forged Fittings & bar stock fitting like Elbow, Tee, Socket Coupling, Ferrule Fitting, Hex Nipple etc.

FLANGES

We Manufacture Stainless Steel, Carbon Steel ASA 150LB, 300 LB, 600 LB and on in the form of slip on Socketweld, Blind, Lapped, Screwed, Weld Neck, Drawing size flanges etc. Table D, Table E, Table F and Table H in the form of slip on blind and also as per your requirement.

STAINLESS STEEL

We supply & have stock of Pipes & tubes Welded/Samless, Pipe Fitting, Flanges, Sheets, Plates, Rods, Angles, Wires, Nut Bolt and components in AISI 304, 304L, 316, 316L, 309, 310, 310S, 321, 410 Grades etc. in all dimensions, in indigenous and imported make.

ALLOY STEEL/ CARBON STEEL

We supply pipes & tubes (Welded/Seamless), Pipe Fitting, Flanges, Sheets, Plates, Rods, Angles, Wires, Nut Bolt and components in all standards, sizes, specification and also as per your requirement.

NON-FERROUS METALS

We also supply Copper, Brass, Aluminium, Lead, Tin Zinc, Monel, Nickel, Hastalloy, Inconel 600/800 etc and other minor metals in your required sizes and shapes.

It is needless to mention that we have gained sufficient experience in this field and achieved substantial business from reputed concerns of chemical industries, petrochemical corporation, pharmaceutical companies, pulp and paper mills, cement plant, sugar plant, fertilizers plants and many other small, medium and large concerns.

We are looking forward eagerly to receive your valued enquiry / requirment for our materials at any early date so as to enable us to quote our lowest and most competitive rates well in time.

Thanking you and assuring of our best and prompt service at all times.

yours truly,
For Syndicate Metal & Alloys

Proprietor / Manager



SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

COMPANY PROFILE

COMPANY NAME : M/s. **SYNDICATE METAL & ALLOYS**

REGD. OFFICE : 34/46, Sonarika Building, 25-C,
Nanubhai Desai Road, C.P. Tank, Girgaon,
Mumbai - 400 004.

CONTACT PERSON : **Mr. B. M. PATEL** - 09322697885 / 09869999947
syndicatebm@gmail.com

Mr. C. B. PATEL - 09323888885
syndicatecb@gmail.com

TELEPHONE : 022-2389 3286 / 6639 4875

STATUS OF FIRM : PROPRIETORSHIP

PROPRIETOR : **Mr. B. M. PATEL**

GSTIN : **27AAFPP5038E1ZR**

PAN No. : **AAFPP5038E**

ITEM IMPORTED/STOCKED : AS PER OUR STOCK TRADE LIST

MANUFACTURERS : AS PER LIST

TESTING FACILITY : AT OUTSIDE GOVT. APPROVED LAB

INSPECTION : ANY TPI AGENCY



SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

CHEMICAL COMPOSITION OF STAINLESS STEEL

Grade	Chemical Composition - Per cent									Nearest Equivalent Specification		
AISI	C Max	Mn Max	P Max	S Max	Si Max	Cr	Ni	Mo	Other Element	IS	En	DIN
201	≤0.15	5.50-7.50	≤0.060	≤0.030	≤1.00	16.00/18.00	3.50-5.50	-	N≤0.25	-	-	-
202	≤0.15	7.50-10.00	≤0.060	≤0.030	≤1.00	17.00/19.00	4.00-6.00	-	N≤0.25	-	-	XBCrMnNi 189
301	0.15	2.0max	0.045	0.040	1.0	16.0/18.0	6.0/8.0	-	-	10Cr17Ni7	-	X12CrNi 177
302	0.15	2.0	0.045	0.030	1.0	17.0/19.0	8.0/10.0	-	-	07Cr18Ni9	En-58A	X12CrNi188
303	0.15	2.0	0.045	-	1.0	17.0/19.0	8.0/10.0	-	-	15Cr18Ni9	En-58M	-
304	0.08	2.0	0.045	0.030	1.0	18.0/20.0	8.0/10.0	-	-	04Cr18Ni10	En-58E	X12CrNiS188
304L	0.030	2.0	0.045	0.030	1.0	18.0/20.0	8.0/10.0	-	-	02Cr18Ni11	-	X12CrNiS188
308	0.08	2.0	0.040	0.030	1.0	10.0/21.0	10.0/12.0	-	-	-	-	X2CrNi189
309	0.20	2.0max	0.045	0.030	1.0	22.0/24.0	12.0/15.0	-	-	20Cr24Ni12	-	X2CrNi 189
309S	0.08	2.0	0.045	0.030	1.0	22.0/24.0	12.0/15.0	-	-	-	-	X15CrNiSi20 12
310	0.25	2.0	0.045	0.030	1.50	24.0/26.0	19.0/22.0	-	-	10Cr25Ni12	-	-
310S	0.08	2.0	0.045	0.030	1.50	24.0/26.0	19.0/22.0	-	-	-	-	x15CrNi2520
316	0.08	2.0	0.045	0.030	1.0	16.0/18.0	10.0/14.0	2.0/3.0	-	04Cr17Ni12Mo2	En 58H	X5CrNi2521
316L	0.030	2.0	0.045	0.030	1.0	16.0/18.0	10.0/14.0	2.0/3.0	-	03Cr17Ni12Mo2	-	Z5CrNiMo 18 10
316Ti	0.080	2.0	0.045	0.030	1.0	16.0/18.0	10.0/14.0	2.0/3.0	Ti5xCmin	-	-	-
317	0.08	2.0	0.045	0.030	1.0	18.0/20.0	11.0/15.0	3.0/4.0	-	-	-	X2CrNiMo 1810
317L	0.030	2.0	0.045	0.030	1.0	18.0/20.0	11.0/15.0	3.0/4.0	-	Ti5 c Min	-	5CrNiMo 17 13
321	0.08	2.0	0.045	0.030	1.0	17.0/19.0	9.0/12.0	-	Ti5xCmin	04Cr18Ni10Ti20	En-58C	X2CrNiMo 1812
347	0.08	2.0	0.045	0.030	1.0	17.0/19.0	9.0/12.0	-	Nb/Ta10xCmin	04Cr18Ni10Nb-40	En-58G	X10CrNiTi189
403	0.15	1.0	0.040	0.030	0.50	11.5/13.0	0.60	-	-	-	-	-
409	0.030	1.00	0.040	0.030	1.00	10.50/11.75	0.50max	-	6X%Crmin 75 max	-	-	X10Cr NiNb 189
409M	0.028	0.8/1.5	0.040	0.030	1.00	10.8/12.5	1.5max	-	T10.25/0.75	-	-	X10Cr 13
410	0.15	1.0	0.040	0.030	1.0	11.5/13.5	0.60	-	-	12Cr13	En-58A	X7CrA 113
410S	0.08	1.0	0.040	0.030	1.0	11.5/13.5	0.60max	-	-	-	-	X10Cr 13
416	0.15	1.25	0.060	0.15	1.00	12.00/14.00	-	≤0.60	-	N0.25 max	-	-
420	over 0.15	1.0	0.040	0.030	1.0	12.0/14.0	0.60	-	-	22Cr13	En56C&D	X12CrS13
430	0.12	1.00	0.040	0.030	0.75	16.00/18.00	0.60	-	-	07Cr17	En-60	-
431	0.20	1.0 max	0.040	0.030	1.0	15.0/17.0	1.25/2.50	0.75max	-	15Cr16Ni2	En-57	X20Cr 13
440A	0.60/0.70	1.0	0.040	0.030	1.0	16/18	-	-	-	-	-	-
440B	0.75	1.0	0.040	0.030	1.0	16.0/18.0	-	0.75max	-	-	-	XBCr17
440C	0.95	1.0	0.040	0.030	1.0	16/18	-	0.75max	-	-	-	X12CrMoS17
446	0.20	1.50 max	0.040	0.030	1.0	23.0/27.0	0.60max	-	N-25max	-	-	X12CrMoS17
17.4PH	0.07	1.0	0.040	0.030	1.0	15/17.50	3/5	-	cv.3.00	-	-	X12CrNi17
UNS S31803	0.03	2.0	0.030	0.020	1.00	21.0/23.0	4.5/6.5	2.5/3.5	N - 0.08 / 0.20	-	-	-
UNS S32760	0.03	1.0	0.03	0.01	1.0	24.0/26.0	6.0/8.0	3.0/4.0	N - 0.20 / 0.30	-	-	X90CrMo V18
UNS S32750	0.03	1.0	0.035	0.02	0.80	24.0/26.0	6.0/8.0	3.0/5.0	N - 0.24 / 0.32	-	-	-
UNS S32550	0.04	1.5	0.04	0.030	1.00	24.0/27.0	4.50/6.50	2.9/3.9	N - 0.10 / 0.25	-	-	-

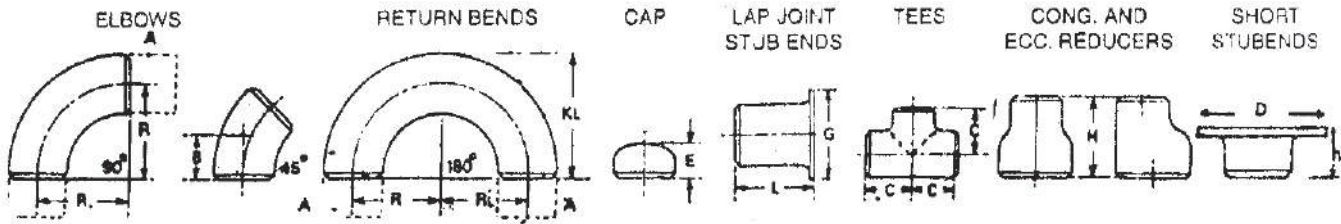


SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

DIMENSION IN M.M. OF BUTT WELDING FITTINGS TO ANSI B 16.9



NOM BORE	PIPE OD	WALL THICKNESS				RADIUS			R	B	C	E	G	L		H	D	H
		SS	10S	40S	80S	1D	1.5D	2D	3D					SHORT	LONG			
½	21.34	1.66	2.11	2.77	3.73	12.7	19.05	25.4	38.1	15.9	25.4	25.4	34.9	50.8	76.2	38.1	45	8
¾	26.67	1.65	2.11	2.87	3.91	19.05	28.57	38.10	57.15	11.1	28.6	25.4	42.8	50.8	76.2	38.1	54	8
1	33.40	1.65	2.77	3.38	4.55	25.4	38.1	50.8	76.2	22.2	38.1	38.1	50.8	50.8	101.6	50.8	64	10
1 1/4	42.16	1.65	2.77	3.56	4.85	31.75	47.6	63.5	95.25	25.0	47.6	38.1	63.5	50.8	101.6	50.8	74	12
1 ½	48.26	1.65	2.77	3.68	5.08	38.1	57.15	76.2	114.3	28.6	57.2	38.1	73.0	50.8	101.6	63.5	84	12
2	60.32	1.65	2.77	3.91	5.54	50.8	76.2	101.6	152.4	34.0	63.5	38.1	92.0	63.5	152.4	76.2	102	14
2 ½	73.02	2.11	3.05	5.16	7.01	63.5	95.25	127.0	190.5	44.0	76.2	38.1	104.8	63.5	152.4	88.9	122	16
3	88.90	2.11	3.05	5.49	7.62	76.2	114.30	152.4	228.6	50.8	85.7	50.8	127.0	63.5	152.4	88.9	138	18
3 ½	101.60	2.11	3.05	5.74	8.08	88.9	113.35	177.8	266.7	57.2	95.3	63.5	139.7	76.2	152.4	101.6	148	18
4	114.30	2.11	3.05	6.02	8.56	101.6	152.4	203.2	304.8	63.5	104.8	63.5	157.2	76.2	152.4	101.6	158	20
5	141.30	2.77	3.40	6.55	9.52	127.0	190.5	254.0	381.0	79.4	123.8	76.2	185.7	76.2	203.2	127.0	188	25
6	168.28	2.77	3.40	7.11	10.97	152.4	228.6	304.8	457.2	95.3	142.8	88.9	215.9	88.9	203.2	139.7	212	25
8	219.08	2.77	3.76	8.18	12.7	203.2	304.8	406.4	609.6	127.0	177.8	101.6	270.0	101.6	203.2	152.4	270	30
10	273.05	3.40	4.19	9.27	12.7	254.0	381.0	508.0	762.0	158.7	215.9	127.0	324.0	127.0	254.0	177.8	325	30
12	323.85	3.96	4.57	9.52	17.45	304.8	457.2	609.6	914.4	190.5	254.0	152.4	381.0	152.4	254.0	203.2	380	35
14	355.60	3.96	4.78	11.13	15.0	355.6	533.4	711.2	1066.8	222.2	280.0	165.1	412.8	152.4	305.0	330.2	415	40
16	406.40	4.19	4.78	12.7	21.45	406.4	609.6	812.8	1219.2	254.0	304.8	177.8	470.0	152.4	305.0	355.6	470	40
18	457.20	4.19	4.78	14.27	23.80	457.2	685.8	914.4	1371.6	385.7	343.0	203.2	533.4	152.4	305.0	381.0	535	40
20	508.00	4.78	5.54	15.09	26.19	508.00	762.0	101.6	1524.0	317.6	381.0	288.6	584.2	152.4	305.0	508.0	585	40
22	588.8	4.78	6.35	15.88	28.57	558.8	838.2	1117.6	1676.4	343	419	254	641.4	152.4	305	508	642	40
24	609.6	5.54	6.35	17.48	30.94	609.6	914.4	1219.2	1828.8	381	432	266.7	692.2	152.4	305	508	693	40

STANDARDS : All dimensions are in mm and confirm to ANSI B 16.9 and M.S.S. P-43 where applicable Dimensional tolerances are in accordance with ANSI B 16.9 and M.S.S. SP-43 where applicable.

RADIUS : Radius of short Elbows is 1 times nominal pipe diameter, Radius of Long Radius Elbows is 1 1/2 times nominal pipe diameter.

MATERIAL OF CONSTRUCTION : S. S. 304/304L/316/316L/317/321 Nickel Alloys.



SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

STAINLESS STEEL PIPE FITTINGS



90° Elbow



45° Elbow



U Bend



Cap



Long Stubend



Tee



Con. Reducer



Ecc. Reducer



Short Stubend



Barrel Nipple



Long Bend



BSP Bend



SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetal.in • Website : www.syndicatemetal.in

SOCKET WELD FITTING



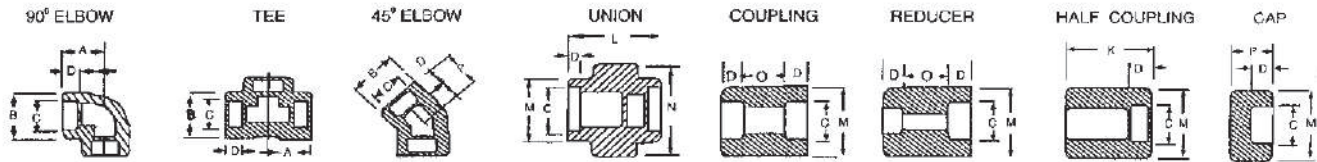


SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

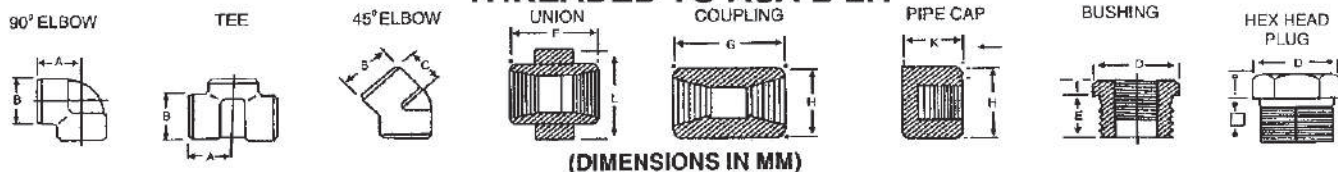
TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

SOCKET WELD FITTING TO ANSI B-16.11



NOM BORE	PIPE O.D.	3000 LBS.									COMMON FACTORS					6000 LBS.			
		A max.	B max.	K	J	L	M	N	P	Q	C min.	D min.	O min.	O max.	A	B	M	K	N
1/8"	10.3	22	18.5	26	16	40	17.3	32	15	10	10.7	10	5	8	22	22	20	25	46
1/4"	13.7	22	22	26	18	43	21.2	32	15	10	14.1	10	5	8	27	25	24	25	51
3/8"	17.2	25	25	26	19	48	25.4	36	16.5	10	17.6	10	3	9	27	28	28	26	60
1/2"	21.3	27	32	30	21	51	31	41	16.5	10	21.7	10	6	13	31	34	34	31	72
3/4"	26.7	34	38	36	24	57	37	50	19.5	13	27	13	6	13	37	42	41	35	80
1"	33.4	37	46	40	25	64	45.2	60	22.5	13	33.8	13	9	17	42	50	50	40	94
1 1/4"	42.2	42	56	40	29	70	55	70	22.5	13	42.6	13	9	17	47	59	58	41	100
1 1/2"	48.3	47	62	40	30	79	61.4	78	24	13	48.7	13	9	17	53	67	66	43	122
2"	60.3	56	75	52	37	89	75	95	29	13	61.2	16	15	23	59	84	83	55	
2 1/2"	73.02	60	92	52	48	114	91.3	125	32	16	73.8	16	14	24		102		56	
3"	89.00	76	110	52	51	127	108.8	140	35	16	89.8	16	14	24		121		58	
4"	114.50	88	137	58		150	136.9		42	19	115.5	19	14	24		152		64	

FORGED SCREWED FITTING TO ANSI B-16.11 3000/6000 LBS. THREADED TO ASA B 2.1



NOM BORE	PIPE O.D.	3000 LBS.							COMMON FACTORS					6000 LBS.						
		A	B	C	G	H	K	D	E	F	I	J	L	A	B	C	G	H	K	
1/8"	10.3	21	22	17	32	16	19	11	10	40	-	6	-	25	25	19	32	22	-	
1/4"	13.7	25	25	19	35	19	25	16	11	43	3	6	32	29	33	22	35	25	27	
3/8"	17.2	29	33	22	38	22	25	17.5	13	48	4	8	38	33	38	25	38	32	27	
1/2"	21.3	33	38	25	48	29	32	22	15	51	5	8	46	38	46	29	48	38	33	
3/4"	26.7	38	46	29	51	35	37	27	16	57	6	10	51	44	56	33	51	44	38	
1"	33.4	44	56	33	60	44	41	35	19	64	6	10	60	51	62	35	60	57	43	
1 1/4"	42.2	51	62	35	67	57	44	44.5	21	70	7	14	72	60	75	43	67	64	64	
1 1/2"	48.3	60	75	43	79	64	44	51	21	79	8	16	80	64	84	44	79	76	48	
2"	60.3	64	84	45	86	76	48	63.5	22	88	9	17	94	83	102	52	86	92	51	
2 1/2"	73.02	83	102	52	92	92	60	76	27	118	10	21	122	95	121	64	92	108	64	
3"	89.00	95	121	64	108	108	65	89	29	121	10	25	140	106	146	79	108	127	68	
4"	114.5	114	152	79	121	140	68	117.5	32	150	13	25	180	114	152	79	121	159	75	

DIMENSIONS AND OTHERS SPECIFICATIONS AS PER CUSTOMERS REQUIREMENTS ARE AVAILABLE ON REQUEST



SYNDICATE Metal & Alloys

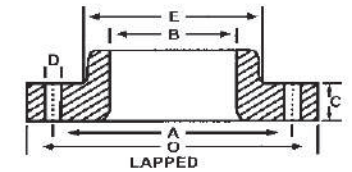
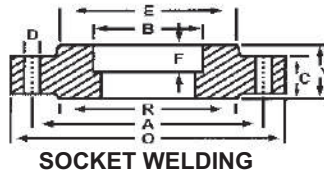
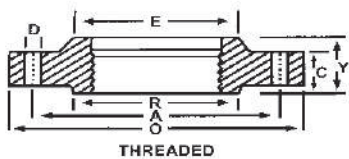
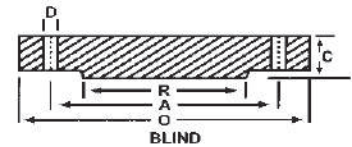
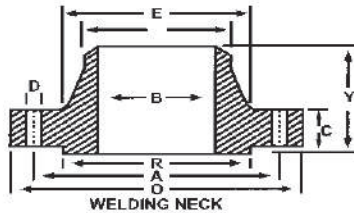
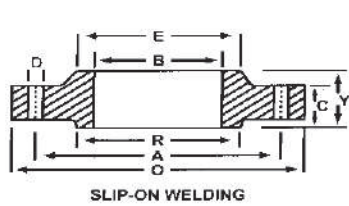
34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

FORGED SCREWED FITTINGS



DIMENSION OF FLANGES TO ASME / ANSI B 16.5



DIMENSIONS OF CLASS 150 FLANGES (ASME / ANSI B16.5)

(in mm)

Nominal Size Inch	Flange Dia O	Dia of Bolt Circle A	Dia of Bolt Holes D	No. of HOLES	Thk of Flange C	Dia of Hub E	Length through Hub			Dia of Bore		Dia of R/F R	Depth of Socket F
							S/O&S/W Y	W/N Y	L/J Y	S/O&S/W B	L/J B		
1/2	88.9	60.4	15.9	4	11.2	30.2	14.2	45.9	15.7	22.3	22.8	35.0	9.6
3/4	98.5	69.8	15.9	4	12.7	38.1	14.2	50.8	15.7	27.6	28.2	42.9	11.1
1	107.9	79.2	15.9	4	14.2	49.2	15.7	53.8	17.5	34.5	35.0	50.8	12.7
1 1/4	117.3	88.9	15.9	4	15.7	58.6	19.0	55.6	20.5	43.1	43.6	63.5	14.2
1 1/2	127.0	98.5	15.9	4	17.5	65.0	20.5	60.4	22.3	49.5	50.0	73.1	15.7
2	152.4	120.6	19.0	4	19.0	77.7	23.8	61.9	25.4	61.9	62.4	91.9	17.5
2 1/2	177.8	139.7	19.0	4	22.3	90.4	26.9	68.3	28.4	74.6	75.4	104.6	19.0
3	190.5	152.4	19.0	4	23.9	107.9	28.4	68.3	30.2	90.6	91.4	127.0	20.5
4	228.6	190.5	19.0	8	23.9	134.8	31.7	74.6	33.2	116.0	116.8	157.2	
5	254.0	215.9	22.2	8	23.9	163.5	35.0	87.3	36.5	143.7	144.5	185.6	
6	279.4	241.3	22.2	8	25.4	192.0	38.1	87.3	39.6	170.6	171.4	215.9	
8	342.9	298.4	22.2	8	28.4	246.1	42.9	100.0	44.4	221.4	222.2	269.7	
10	406.4	361.9	25.4	12	30.2	304.8	47.7	100.0	49.2	276.3	277.3	323.8	
12	482.6	431.8	25.4	12	31.8	365.2	53.8	112.7	55.6	327.1	328.1	381.0	
14	533.4	476.2	28.6	12	35.0	400.0	55.6	125.4	79.2	359.1	360.1	412.7	
16	596.9	539.7	28.6	16	36.6	457.2	61.9	125.4	87.3	410.4	411.2	469.9	
18	635.0	577.8	31.7	16	39.6	504.9	66.5	138.8	96.7	461.7	462.2	533.4	
20	698.5	635.0	31.7	20	42.9	558.8	71.3	142.7	103.1	513.0	514.3	584.2	
24	812.8	749.3	34.9	20	47.8	663.4	81.0	150.8	111.2	615.9	615.9	692.1	

DIMENSIONS OF CLASS 300 FLANGES (ASME / ANSI B16.5)

(in mm)

Nominal Size Inch	Flange Dia O	Dia of Bolt Circle A	Dia of Bolt Holes D	No. of HOLES	Thk of Flange C	Dia of Hub E	Length through Hub			Dia of Bore		Dia of R/F R	Depth of Socket F
							S/O&S/W Y	W/N Y	L/J Y	S/O&S/W B	L/J B		
1/2	95.2	66.5	15.9	4	14.2	38.1	20.5	50.8	22.3	22.3	22.8	35.0	9.6
3/4	117.3	82.5	19.0	4	15.7	47.7	23.8	55.6	25.4	27.6	28.2	42.9	11.1
1	123.9	88.9	19.0	4	17.5	53.8	25.4	60.4	26.9	34.5	35.0	50.8	12.7
1 1/4	133.3	98.5	19.0	4	19.0	63.5	25.4	63.5	26.9	43.1	43.6	63.5	14.2
1 1/2	155.4	114.3	22.2	4	20.6	69.8	28.4	66.5	30.2	49.5	50.0	73.1	15.7
2	165.1	127.0	19.0	8	22.4	84.0	33.2	69.8	33.2	61.9	62.4	91.9	17.5
2 1/2	190.5	149.3	22.2	8	25.4	100.0	38.1	76.2	38.1	74.6	75.4	104.6	19.0
3	209.5	168.1	22.2	8	28.4	117.3	42.9	79.2	42.9	90.6	91.4	127.0	20.5
4	254.0	200.1	22.2	8	31.8	146.0	47.7	85.8	47.7	116.0	116.8	157.2	
5	279.4	234.9	22.2	8	35.0	177.8	50.8	98.5	50.8	143.7	144.5	185.6	
6	317.5	269.7	22.2	12	36.6	206.2	52.3	98.5	52.3	170.6	171.4	215.9	
8	381.0	330.2	25.4	12	41.1	260.3	61.9	111.2	61.9	221.4	222.2	269.7	
10	444.5	387.3	28.6	16	47.8	320.5	66.5	117.3	95.2	276.3	277.3	323.8	
12	520.7	450.8	31.7	16	50.8	374.6	73.1	130.0	101.6	327.1	328.1	381.0	
14	584.2	514.3	31.7	20	53.8	425.4	76.2	142.2	111.2	359.1	360.1	412.7	
16	647.7	571.5	34.9	20	57.2	482.6	82.5	146.0	120.6	410.4	411.2	469.9	
18	711.2	628.6	34.9	24	60.5	533.4	88.9	158.7	130.0	461.7	462.2	533.4	
20	774.7	685.8	34.9	24	63.5	587.2	95.2	162.0	139.7	513.0	514.3	584.2	
24	914.4	812.8	41.3	24	69.9	701.5	106.4	168.1	152.4	615.9	615.9	692.1	

General Note : All Dimensions are in millimeters.

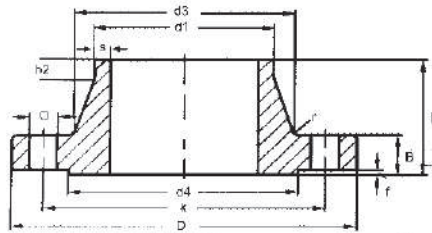
1) Thickness 'C' is inclusive Raised Face Thickness of 1.6 MM. For Class 150 and Class 300.



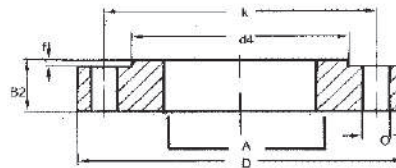
SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in



WNRF



SORF



BLRF

DIMENSIONS IN MM OF PN 25 FLANGES

SIZE	D	D1	A	B	B1	B2	k	h1	d3	s	r	h2	d4	f	No. of	Size	O
	O.D	NK OD	ID	thk 2634	thk 2627	thk	PCD	wnrf		Nk thk			RF 2634	RF Thk	Holes	BOLT	Hole
				SORF	WNRF	BLRF		height					WNRF				DIA
10	90	17.2	17.7	16	16	16	60	35	28	1.8	4	6	40	2	4	M 12	14
15	95	21.3	22	16	16	16	65	38	32	2	4	6	45	2	4	M 12	14
20	105	26.9	27.6	18	18	18	75	40	40	2.3	4	6	58	2	4	M 12	14
25	115	33.7	34.4	18	18	18	85	40	46	2.6	4	6	68	2	4	M 12	14
32	140	42.4	43.1	18	18	18	100	42	56	2.6	6	6	78	2	4	M 16	18
40	150	48.3	49	18	18	18	110	45	64	2.6	6	7	88	3	4	M 16	18
50	165	60.3	61.1	20	20	20	125	48	75	2.9	6	8	102	3	4	M 16	18
65	185	76.1	77.1	22	22	22	145	52	90	2.9	6	10	122	3	8	M 16	18
80	200	88.9	90.3	24	24	24	160	58	105	3.2	8	12	138	3	8	M 16	18
100	235	114.3	115.9	24	24	24	190	65	134	3.6	8	12	162	3	8	M 20	22
125	270	139.5	141.6	26	26	26	220	68	162	4	8	12	188	3	8	M 24	26
150	300	168.3	170.5	28	28	28	250	75	192	4.5	10	12	218	3	8	M 24	26
175	330	193.7	196.1	28	28	28	280	75	218	5.6	10	15	248	3	12	M 24	26
200	360	219.1	221.8	30	30	30	310	80	244	6.3	10	16	278	3	12	M 24	26
250	425	273	276.2	32	32	32	370	88	298	7.1	12	18	335	3	12	M 27	30
300	485	323.9	327.6	34	34	34	430	92	352	8	12	18	395	4	16	M 27	30
350	555	355.6	359.7	38	38	38	490	100	398	8	12	20	450	4	16	M 30	33
400	620	406.4	411	40	40	40	550	110	452	8.8	12	20	505	4	16	M 33	36
450	670	457	462.5	42	-	42	600	110	500	8.8	12	20	550	4	20	M 33	36
500	730	508	513.6	44	45	44	660	125	558	10	12	20	615	4	20	M 33	36
600	845	610	-	46	-	-	770	125	660	11	12	20	720	5	20	M 36	39
700	960	711	-	46	-	-	875	125	760	13	20	24	820	5	24	M 39	42
800	1085	813	-	50	-	-	990	135	865	14	22	24	930	5	24	M 45	48
900	1185	914	-	54	-	-	1090	145	968	16	24	28	1030	5	28	M 45	48
1000	1320	1016	-	58	-	-	1210	155	1070	18	24	28	1140	5	28	M 52	56

DIMENSIONS IN MM OF PN 40 FLANGES

SIZE	D	D1	A	B	B1	B2	k	h1	d3	s	r	h2	d4	f	No	Size	O
	O.D	NK OD	ID	thk 2635	thk 2627	thk	PCD	wnrf		Nk thk			RF 2635	RF Thk	of Holes	BOLT	Hole
				SORF	WNRF	BLRF		height					WNRF				DIA
10	90	17.2	17.7	16	16	16	60	35	28	1.8	4	6	40	2	4	M 12	14
15	95	21.3	22	16	16	16	65	38	32	2	4	6	45	2	4	M 12	14
20	105	26.9	27.6	18	18	18	75	40	40	2.3	4	6	58	2	4	M 12	14
25	115	33.7	34.4	18	18	18	85	40	46	2.6	4	6	68	2	4	M 12	14
32	140	42.4	43.1	18	18	18	100	42	56	2.6	6	6	78	2	4	M 16	18
40	150	48.3	49	18	18	18	110	45	64	2.6	6	7	88	3	4	M 16	18
50	165	60.3	61.1	20	20	20	125	48	75	2.9	6	8	102	3	4	M 16	18
65	185	76.1	77.1	22	22	22	145	52	90	2.9	6	10	122	3	8	M 16	18
80	200	88.9	90.3	24	24	24	160	58	105	3.2	8	12	138	3	8	M 16	18
100	235	114.3	115.9	24	24	24	190	65	134	3.6	8	12	162	3	8	M 20	22
125	270	139.5	141.6	26	26	26	220	68	162	4	8	12	188	3	8	M 24	26
150	300	168.3	170.6	28	28	28	250	75	192	4.5	10	12	218	3	8	M 24	26
175	350	193.7	196.1	32	32	32	295	82	218	5.6	10	15	260	3	12	M 27	30
200	375	219.1	221.6	34	34	34	320	88	244	6.3	10	16	285	3	12	M 27	30
250	450	273	276.2	38	38	38	385	105	306	7.1	12	18	345	3	12	M 30	33
300	515	323.9	327.6	42	42	42	450	115	362	8	12	18	410	4	16	M 30	33
350	580	355.6	359.7	46	46	46	510	125	408	8.8	12	20	465	4	16	M 33	36
400	660	406.4	411	50	50	50	585	135	462	11	12	20	535	4	16	M 36	39
450	685	457	462.5	50	50	50	610	135	500	12.5	12	20	560	4	20	M 36	39
500	755	508	513.6	52	52	52	670	140	562	14.2	12	20	615	4	20	M 39	42



SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

Dimensions of Long Radius Elbows

Nominal Diameter	NPS	DN	Out Side Diameter	Center to end 90°		Center to Center	90° L/R Elbow Approx Weight				
				A	B		Sch-5	Sch-10	Sch-20	Sch-40	Sch-80
1/2	15	18	218	38	38	76	0.04	0.05	0.06	0.08	0.08
3/4	20	25	267	38	19	76	0.06	0.07	0.08	0.09	0.10
1	25	32	334	38	38	76	0.06	0.08	0.09	0.10	0.13
1 1/4	32	38	422	48	48	95	0.11	0.18	0.21	0.23	0.31
1 1/2	40	45	483	57	57	114	0.16	0.28	0.30	0.34	0.44
2	50	57	603	76	76	152	0.25	0.48	0.57	0.62	0.85
2 1/2	65	75	761	95	44	190	0.55	0.80	0.97	1.35	1.72
3	80	89	89	114	114	229	0.80	1.17	1.15	2.04	2.86
3 1/2	90	101.6	101.6	133	133	267	1.08	1.17	1.15	2.04	2.86
4	100	108	114.3	152	64	305	1.31	1.91	2.65	3.54	5.13
5	125	133	141.3	190	190	381	2.68	3.24	4.81	6.16	8.71
6	150	159	168.3	229	229	457	3.85	4.69	6.97	9.56	14.4
8	200	219	218.3	305	305	610	7.15	9.65	16.1	20.4	31
10	250	273	267.4	381	381	762	13.7	16.7	25.8	36.2	57.2
12	300	325	323.9	457	457	914	23.0	26.1	36.1	55.7	95.2
14	350	377	355.6	533	533	1067	30.8	36.9	50.2	83.1	147
16	400	426	406.4	610	610	1219	41.8	47.7	78	122	211
18	450	478	457.2	686	686	1372	53.11	60.52	100.62	199.44	318.9
22	500	559	508	838	343	1524	86.58	100.21	144.06	210.78	279.45
22	550	559	508	838	343	1676	86.58	100.21	144.06	210.78	279.45
24	600	630	610	914	914	1829	123.32	141.16	177.37	270.78	406.1

Dimensions of Short Radius Elbows

Nominal size	DN	Out Side Diameter	Center to center (O)	Center to center (O)	90° S/R Elbow Approx Weight (Kg)				
					Sch-5	Sch-10	Sch-20	Sch-40	Sch-80
1	25	33.5	50.8	41.1	0.05	0.08	0.09	0.1	0.13
1 1/4	32	42.2	63.5	52.3	0.08	0.14	0.16	0.17	0.23
1 1/2	40	48.3	76.2	62	0.11	0.19	0.21	0.24	0.33
2	50	60.5	101.6	81	0.19	0.32	0.41	0.44	0.6
2 1/2	65	73.2	127	100.1	0.39	0.56	0.65	0.91	1.21
3	80	88.9	152.4	120.7	0.54	0.78	1.01	1.36	1.84
3 1/2	90	101.6	177.8	139.7	0.73	1.04	1.36	1.91	2.62
4	100	114.3	203.2	158.8	0.89	1.27	1.65	2.44	3.39
5	125	141.2	254	196.9	1.79	2.19	3.17	4.10	5.83
6	150	168.1	304.8	236.5	2.72	3.32	4.84	6.79	10.23
8	200	218.9	406.4	312.7	4.74	6.41	10.61	13.65	20.74
10	250	273.1	508	390.7	9.08	11.16	16.64	24.22	32.75
12	300	323.9	609.6	466.9	15.12	17.42	23.88	35.76	47.18
14	350	355.6	711.2	533.4	20.51	24.70	40.99	48.62	64.24
16	400	406.4	812.8	609.6	27.98	31.88	52.95	62.84	83.11
18	450	457.2	914.4	685.8	35.38	40.32	67.01	79.57	105.32
20	500	508	1016	762	-	-	-	-	-
22	550	558.8	1117.6	838.2	-	-	-	-	-
24	600	609.6	1219.2	914.4	-	-	-	-	-



SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

ANSI B 36.19 Stainless Steel Pipe Dimension in MM & Weight Per Kg.

Nominal Pipe size		Outside Diameter	Schedule 5 S		Schedule 10 S		Schedule 20 S		Schedule 40 S		Schedule 80 S		Schedule 160 S		XXS	
mm	inch	mm	WT. mm	WEIGHT(KG/M)	WT. mm	WEIGHT(KG/M)	WT. mm	WEIGHT(KG/M)	WT. mm	WEIGHT(KG/M)	WT. mm	WEIGHT(KG/M)	WT. mm	WEIGHT(KG/M)	WT. mm	WEIGHT(KG/M)
3	1/8	10.3	1.2	0.260	1.24	0.280	1.5	0.33	1.73	0.370	2.41	0.475	-	-	-	-
6	1/4	13.7	1.2	0.370	1.65	0.498	2.00	0.58	2.24	0.643	3.02	0.808	-	-	-	-
10	3/8	17.1	1.2	0.470	1.65	0.640	2.00	0.74	2.31	0.857	3.20	1.116	-	-	-	-
15	1/2	21.3	1.65	0.812	2.11	1.014	2.30	1.07	2.77	1.286	3.73	1.642	4.78	1.94	7.47	2.55
20	3/4	26.7	1.65	1.032	2.11	1.300	2.55	1.52	2.87	1.708	3.91	2.225	5.56	2.90	7.82	3.64
25	1	33.4	1.65	1.310	2.77	2.121	2.55	1.94	3.38	2.537	4.55	3.282	6.35	4.24	9.09	5.45
32	1 1/4	42.2	1.65	1.671	2.77	2.728	3.00	2.90	3.56	3.435	4.85	4.524	6.35	5.61	9.70	7.77
40	1 1/2	48.3	1.65	1.923	2.77	3.150	3.00	3.35	3.68	4.101	5.08	5.484	7.14	7.25	10.15	9.55
50	2	60.3	1.65	2.421	2.77	3.986	3.00	4.24	3.91	5.515	5.54	7.588	8.74	11.11	11.07	13.44
65	2 1/2	73.0	2.11	3.741	3.05	5.336	4.00	6.81	5.16	8.756	7.01	11.570	9.53	14.91	14.02	20.39
80	3	88.9	2.11	4.578	3.05	6.546	4.00	8.37	5.49	11.448	7.62	15.484	11.1	21.30	15.24	27.68
100	4	114.3	2.11	5.918	3.05	8.483	4.50	12.18	6.02	16.296	8.56	22.628	13.49	33.54	17.12	41.03
125	5	141.3	2.77	9.593	3.40	11.721	5.00	16.80	6.55	22.065	9.53	31.364	15.68	49.11	19.05	57.43
150	6	168.3	2.77	11.461	3.40	14.014	6.35	25.36	7.11	28.648	10.97	43.142	18.25	67.53	21.95	79.22
200	8	219.1	2.77	14.979	3.76	20.240	6.35	33.31	8.18	43.129	12.7	65.526	23.01	111.27	22.23	107.92
250	10	273.1	3.40	22.920	4.19	28.163	6.35	41.77	9.27	61.131	12.7	82.661	28.58	172.33	25.40	155.15
300	12	323.8	3.96	31.669	4.57	36.477	6.35	49.7	9.53	74.810	12.7	98.790	33.32	238.68	25.40	186.90
350	14	355.6	3.96	34.340	4.78	41.923	7.92	67.90	11.13	95.84	19.5	160.28				
400	16	406.4	4.19	41.560	4.78	47.993	7.92	77.82	12.7	124.99	ASTM A 312 TP 304					
450	18	457.2	4.19	46.810	4.78	54.064	7.92	87.74	14.27	157.26	ASTM A 312 TP 316					
500	20	508.0	4.78	59.310	5.54	69.590	9.53	117.14	15.09	185.95						
600	24	610.0	5.54	82.570	6.35	94.520	9.53	141.11	17.48	255.41						

Formula - Pipe Weight Kg / Mtr OD - Thick x Thick x 0.02466 = Kg Per Mtr.

Chemical Composition & Mechanical Properties of S.S. Pipe as per ASTM A 312

Chemical Composition %										Mechanical Properties, min						
Grade	C Max	Si Max	Mn Max	P Max	S Max	Ni	Cr	Mo	Other	Tensile Strength min. Ksi (Mpa)	Yield Point Ksi (Mpa)	Elongation % (G.L.: 2in or 1mm)			Hardness Test Max	
												Full Section	Strip Specimen	Round Specimen	Brinell	Rockwell
304	0.08	1.00	2.00	0.045	0.030	8.00-11.0	18.0-20.0	-	-	75(515)	30(205)	35	35.56T + 17.50	28	192	B 90
304L	0.035	1.00	2.00	0.045	0.030	8.00-13.0	18.0-20.0	-	-	70(485)	25(170)	35	35.56T + 17.50	28	192	B 90
304H	0.04-0.10	1.00	2.00	0.045	0.030	8.00-11.0	18.0-20.0	-	-	75(515)	30(205)	35	35.56T + 17.50	28	192	B 90
316	0.08	1.00	2.00	0.045	0.030	11.0-14.0	16.0-18.0	2.0/3.0	-	75(515)	30(205)	35	35.56T + 17.50	28	192	B 90
316L	0.035	1.00	2.00	0.045	0.030	10.0-14.0	16.0-18.0	2.0/3.0	-	70(485)	25(170)	35	35.56T + 17.50	28	192	B 90
316H	0.04-0.10	1.00	2.00	0.045	0.030	11.0-14.0	16.0-18.0	2.0/3.0	-	75(515)	30(205)	35	35.56T + 17.50	28	192	B 90
316Ti	0.08	0.75	2.00	0.045	0.030	10.0-12.0	16.0-18.0	2.0/3.0	Ti5xC% <0.70	75(515)	30(205)	35	35.56T + 17.50	28	192	B 90
317L	0.035	1.00	2.00	0.045	0.030	11.0-15.0	18.0-20.0	3.0/4.0	-	75(515)	30(205)	35	35.56T + 17.50	28	192	B 90
309S	0.08	1.00	2.00	0.045	0.030	12.0-15.0	22.0-24.0	0.75	-	75(515)	30(205)	35	35.56T + 17.50	28	192	B 90
310S	0.08	1.00	2.00	0.045	0.030	19.0-22.0	24.0-26.0	0.75	-	75(515)	30(205)	35	35.56T + 17.50	28	192	B 90
310H	0.04-0.10	1.00	2.00	0.045	0.030	19.0-22.0	24.0-26.0	-	-	75(515)	30(205)	35	35.56T + 17.50	28	192	B 90
321	0.08	1.00	2.00	0.045	0.030	9.0-12.0	17.0-19.0	-	Ti5xC% <0.70	75(515)	30(205)	35	35.56T + 17.50	28	192	B 90
312H	0.04-0.10	1.00	2.00	0.045	0.030	9.0-12.0	17.0-19.0	-	Ti4xC% <0.60	75(515)	30(205)	35	35.56T + 17.50	28	192	B 90
347	0.08	1.00	2.00	0.045	0.030	9.0-13.0	17.0-19.0	-	Nb/Ta: 10xC% <1%	75(515)	30(205)	35	35.56T + 17.50	28	192	B 90
347H	0.04-0.10	1.00	2.00	0.045	0.030	9.0-13.0	17.0-19.0	-	Nb/Ta: 8xC% <10%	75(515)	30(205)	35	35.56T + 17.50	28	192	B 90



SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

Sheet/Plates/Coils

We have been offering to our clients a vast range of Sheets and Coils, that are offered in various specifications to our clients. Catering to the requirements of various industries, our range is known for its corrosion resistance, durability & high tensile strength.

Our clients can avail from us Plates that are manufactured using high grade stainless steel. These cater to the requirements of various industries and are known for their attributes, such as high tensile strength, corrosion resistance & long life usage. Further, we also have the expertise to customize our range as per the requirements of the clients.

- Carbon Steel / Alloy Steel / Nickel Alloys
- Stainless Steel / Sheets / Coil / Plates / Strips

Nickel Alloy

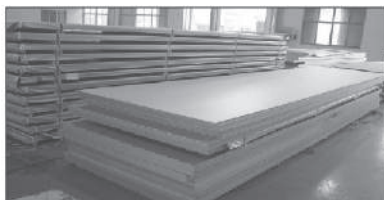
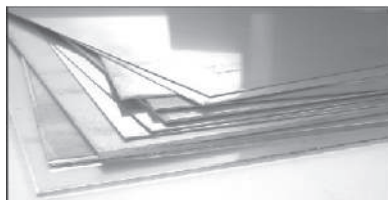
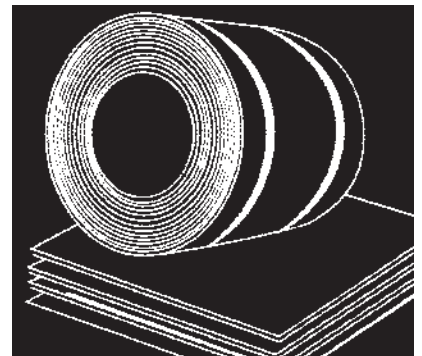
ASTM / ASME SB 163 UNS 2200 (NICKEL 200)
ASTM / ASME SB 163 UNS 2201 (NICKEL 201)
ASTM / ASME SB 163 / 165 UNS 4400 (MONEL 400)
ASTM / ASME SB 464 UNS 8020 (ALLOY 20 / 20 CB 3)
ASTM / ASME SB 704 / 705 UNS 8825 INCONEL (825)
ASTM / ASME SB 167 / 517 UNS 6600 (INCONEL 600)
ASTM / ASME SB 167 UNS 6601 (INCONEL 601)
ASTM / ASME SB 704 / 705 UNS 6625 (INCONEL 625)
ASTM / ASME SB 619 / 622 / 626 UNS 10276 (HASTELLOY C 276)

Stainless Steel: Plates as per ASTM A240, Gr. TP 304, 304L, 304LN, 309, 309S, 309H, 310H, 316, 316L, 316H, 316LN, 316Ti, 317, 317L, 321, 321H, 347, 347H, 409, 410, 420, 430 etc

Carbon Steel / Boiler Quality Plates : as per IS 2062/ASTMA36, Gr. A, B & C, IS 2002 Gr. 1 & 2 ASTMA 516 Gr. 60 & 70

Alloy Steel Plates : as per ASTM A387 Gr. 2, 5, 9, 11, 12 & 22 in class 1 & 2 ASTM A204 Gr. A & B, DIN 17175 Gr. 15Mo3 & 16Mo3 with IBR Test Certificate.

Range: 0.5 mm To 200 mm thick in 1000 mm To 3000 mm width & 2500 mm to 12500 mm length available with NACE MR 01-75





SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

(NICKEL BASE ALLOYS) GUIDE TO APPLICATIONS

- NICKEL 200** Commercial pure wrought Nickel for the construction of chemical plant
- NICKEL 201** A low-carbon grade of nickel free from the stress-corrosion cracking associated with graphitisation in chemical plant operating at temperatures above 300° C, e.g. caustic soda plant.
- NICKEL 205** A high-purity nickel for anodes, plants and grids of electronic valves and for magnetostrictive transducers.
- NICKEL 212** Slightly stiffer than pure nickel. Used for electrode support wires in radio valves and tungsten filament lamps.
- NICKEL 222** A cathode nickel for the sleeves of indirectly heated, oxide-coated cathode in radio valves.
- NICKEL 270** A high-purity nickel with a minimum temperature - coefficient of resistance of 0.006°C over the range 0.100°C. Made by the powder metallurgy process. Used for components of special valves, such as hydrogen thyristors and for electric resistance thermometer and controls.
- MONEL alloy 400** A general engineering alloy with good resistance to corrosion by sea water, sulphuric, hydrochloric and phosphoric acids, pharmaceutical products, ammonium sulphate, fatty acids, etc. It retains its strength and toughness up to about 4500°C and is used for chemical, stream and petroleum plant, marine and pickling equipment.
- MONEL alloy K-500** An alloy with similar corrosion-resistance to MONEL alloy 400 but amenable to precipitation hardening to give high strength. Used for propeller and pump shafts, bolts, doctor blades and valve spindles.
- Cast Monel alloys** Cast alloy pig supplied for foundry addition to silicon. For corrosion-resistance castings.
- Inconel alloy 600** This alloy has excellent mechanical properties and oxidation-resistance at high temperatures. It is used for furnace parts, heat-treatment equipment, heating element sheathing in nuclear engineering and in the construction of chemical plant.
- Inconel alloy 625** An alloy with high strength and toughness from cryogenic temperatures to 100°C in addition to good oxidation - resistance, It resists attack by other media and is virtually immune to chloride - stress-corrosion cracking. It is used in aerospace and is being evaluated for chemical and marine engineering.
- Incoloy alloy 800** This alloy resists hydrogen/hydrogen sulphide corrosion and chloride stress corrosion cracking. It is used for pigtail and headers and hydrocarbon "cracker" tubes for other high- temperature processing equipment.
- Incoloy alloy 825** This product resists corrosion by acids and alkalis in either reducing or oxidising condition. It is resistant to stress - corrosion cracking and pitting and used for chemical plant and pickling plant. A nickel iron cobalt alloy combining a low coefficient of expansion and higher inflexion temperature with higher strength than is usual in this composition range. It is being evaluated for such application as diesel engine piston crowns compensating members in gas turbine engines and controlled clearance rotating machinery parts.
- Incoloy alloy DS** A general purpose heat resisting alloy with particular resistance to carburisation and alternating carburisation and oxidation. It is used for furnace parts, heat treatment and vitreous enamelling equipment.



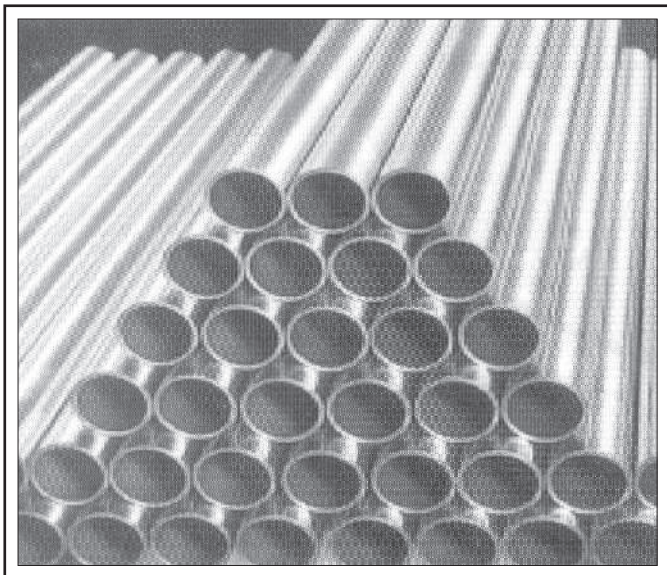
SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetal.in • Website : www.syndicatemetal.in

MECHANICAL PROPERTIES OF S.S.PIPES

Table-2 Annealing Requirements			A 312/A 312M		Table-3 Tensile Requirements		
Grade or UNS Designation	Solution Treating Temperature	Cooling Requirements	Grade	UNS Designation	Tensile Strength, min Ksi (MPa)	Yield Strength, Min Ksi (MPa)	
All Grades not individually listed below	1900°F (1040°C)	rapid ²	TP304L	S30403	70 (485)	25 (170)	
TP321H, TP347H, TP348H			TP316L	S31603	70 (485)	25 (170)	
Cold Rolled	2000°F (1100°C)		TP304	S30400	75 (515)	30 (205)	
Hot Rolled only	1925°F (1050°C)		TP304H	S30409	75 (515)	30 (205)	
TP304H, TP316H			TP309Cb	S30940	75 (515)	30 (205)	
Cold Rolled	1900°F (1040°C)		TP309H	S30909	75 (515)	30 (205)	
Hot rolled only	1900°F (1040°C)		TP309HCB	S30941	75 (515)	30 (205)	
TP309H, TP309HCB, TP310H	1900°F (1040°C)		TP309S	S30908	75 (515)	30 (205)	
TP310HCB			TP310Cb	S31040	75 (515)	30 (205)	
S30815	1920°F (1050°C)	rapid	TP310H	S31009	75 (515)	30 (205)	
S31272	1920°F (1050°C)	rapid	TP310HCB	S31041	75 (515)	30 (205)	
S31254	2100°F (1150°C)	rapid	TP310S	S31008	75 (515)	30 (205)	
S24565	2050-2140°F (1120-1170°C)	rapid		S31272	65 (450)	29 (200)	
S35315	2010°F (1100°C)	rapid	TP316	S31600	75 (515)	30 (205)	
N08367	2010°F (1100°C)	rapid	TP316H	S31609	75 (515)	30 (205)	
N08904	2010°F (1100°C)	rapid	TP317	S31700	75 (515)	30 (205)	
			TP317L	S31703	75 (515)	30 (205)	
			TP321	S32100			
			Welded		75 (515)	30 (205)	
			Seamless				
			≤ 3/8 in.		75 (515)	30 (205)	
			> 3/8 in.		70 (485)	25 (170)	
			TP321H	S32109			
			Welded		75 (515)	30 (205)	
			Seamless				
			< 3/8 in.		75 (515)	30 (205)	
			> 3/8 in.		70 (485)	25 (170)	
			TP347	S34700	75 (515)	30 (205)	
			TP347H	S3470	75 (515)	30 (205)	
			TP347LN	S34751	75 (515)	30 (205)	
			TP348	S34800	75 (515)	30 (205)	
			TP348H	S34809	75 (515)	30 (205)	
			TPXM-10	S21900	90 (620)	50 (345)	
			TPXM-11	S21904	90 (620)	50 (345)	
			TPXM-15	S38100	75 (515)	30 (205)	
			TPXM-29	S24000	100 (690)	55 (380)	
			TPXM-19	S20910	100 (690)	55 (380)	
			TP304N	S30451	80 (550)	35 (240)	
			TP316N	S31651	80 (550)	35 (240)	
			TP304LN	S31653	75 (515)	30 (205)	
			---	S31254	94 (650)	44 (300)	
			---	S30615	90 (620)	40 (275)	
			---	S30815	87 (600)	45 (310)	
			---	S30600	78 (540)	35 (240)	
			---	S31725	75 (515)	30 (205)	
			---	S31726	80 (550)	35 (240)	
			---	S31050			
			T<0.25 IN.		84 (580)	39 (270)	
			T>0.25 in.		78 (540)	37 (255)	
			---	S32615	80 (550)	32 (220)	
			---	S33228	73 (500)	27 (185)	
			---	S24565	115 (795)	60 (415)	
			---	S30415	87 (600)	42 (290)	
			---	S32654	109 (750)	62 (430)	
			---	S35315	94 (650)	39 (270)	
			---	N08367:			
			t<0.187		100 (690)	45 (310)	
			t>0.187		95 (655)	45 (310)	
			---	N08904	71(490)	31(215)	
Elongation in 2 in or 50 mm (or 4D), min,% Longitudinal Transverse							
All Grades except S 31050 and S 32615 35 25 S32615, S31050 25 --N08367							
Prior to the issuance of A 312/A 312 M- 88a, the tensile and yield strength values were							
76 (515) and 30 (205) respectively, for nominal wall greater than 3/8 in. (9.5 mm).							





SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

STAINLESS STEEL EQUIVALENT SPECIFICATIONS FOR MECHANICAL

BS	SS	Werkstoff-Nr.	AFNOR	Mechanical strength Proof strength Rp _{0.2} MPa, min	Tensile strength, R _m MPa	Elongation A %, min
304S31/51	2333	1.4301	Z6CN 18-09	210	515-690	45
304S11/304S31	2352/2333	1.4306/1.4301	Z2CN 18-10/Z6CN18-09	210	515-680	40 ⁸⁾
304S11	2352	1.4306	Z2CN18-10	210	515-680	45
-	2371	1.4311	Z2CN18-10AZ	275	550-750	40
316S33	2343	1.4436/(1.4401)	Z6CND17-12	220	515-690	40
316S13/16S33	2353/2343	1.4435/1.4436	Z2CND17-13/Z6CND17-12	220	515-690	40 ⁸⁾
316S13	2353	1.4435/(1.4404)	Z2CND17-13	220	515-690	45
-	2367	(1.4438)	Z2CND19-15	220	515-690	40
316S11	2348	1.4404/1.4401	Z2CND17-12/ (Z6CND17-11)	220	515-690	45
321S31/51	2337	1.4541/1.4878 ¹⁾	-	210	515-690	35
321S31/51	2337	1.4541/1.4878 ¹⁾	-	210	515-690	35
347S31/51	2338	1.4550	(Z6CNNb18-10)	210	515-690	35
-	-	1.4961	-	210	510-690	35
-	2350	1.4571	(Z6CNDT17-12)	210(190)	500-730	35
-	2350	1.4571	(Z6CNDT17-12)	210(190)	500-730	35
316S13	2353	1.4435	(Z2CND17-12)	190	490-690	40
-	(2375)	1.4429	Z2CNS17-12AZ	300	590-780	40
-	-	1.4335	Z2CN25-20	210	500-670	35
-	-	1.4466	Z1CND25-22AZ	270	580-780	30
-	-	1.4465	-	255	540-740	40
-	2376	1.4417	Z2CND18-05-03	450	700-880	30
-	2327	1.4362	Z2CN23-04AZ	400	600-820	25
-	2377	1.4462	Z2CND22-05-03	450	680-880	25
-	2328	-	-	550	800-1000	25
-	2562	1.4539	Z1NCUDU25-20-04	220	520-720	35
-	2378	(1.4529)	Z1CNDU20-18-06AZ	300	≥650	35
-	2584	1.4563	Z1NCUDU31-27-03	215	550-750	40
-	2322	1.4749	-	275	500-700	20
-	2361	1.4845	Z12CN25-20	210	515-750	35
-	2368	1.4893	-	310	600-850	40
NA15	-	1.4959 ²⁾ /1.4876 ¹⁾ 1.4958 ³⁾	-	170	450-700	35
NA15	-	1.4558	-	205	520-690	30
-	-	2.4858	-	240	590-750	30
-	-	-	-	240	≥585	30
NA14	-	2.4816	-	245	550-750	30
-	2324	1.4460 ¹⁾	-	485	620-800	20
-	2346	1.4305	Z10CNF18-09	215	500-700	45



SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

ASA PIPE SCHEDULES WALL = WALL THICKNESS IN MILLIMETER WT = WEIGHT IN KG PER MTR

CARBON STEEL SEAMLESS PIPE DIMENSIONS & WEIGHT

Nominal O D Pipe Size mm Inches	Schedule 10		Schedule 20		Schedule 30		Standard		Schedule 40		Schedule 60		Extra Strong		Schedule 80		Schedule 100		Schedule 120		Schedule 140		Schedule 160		Double Extra Strong	
	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.
1/8 10.3							1.7	0.357	1.7	0.357			2.4	0.470	2.4	0.470										
1/4 13.7							2.2	0.625	2.2	0.625			3.0	0.804	3.0	0.804										
3/8 17.1							2.3	0.848	2.3	0.848			3.2	1.10	3.2	1.10										
1/2 21.3							2.8	1.26	2.8	1.26			3.7	1.62	3.7	1.62										
3/4 26.7							2.9	1.68	2.9	1.68			3.9	2.19	3.9	2.19										
1 33.4							3.4	2.50	3.4	2.50			4.5	3.23	4.5	3.23										
1 1/4 42.2							3.6	3.38	3.6	3.38			4.9	4.46	4.9	4.46										
1 1/2 48.3							3.7	4.05	3.7	4.05			5.1	5.40	5.1	5.40										
2 60.3							3.9	5.43	3.9	5.43			5.5	7.47	5.5	7.47										
2 1/2 73.0							5.2	8.62	5.2	8.62			7.0	11.4	7.0	11.4										
3 88.9							5.5	11.3	5.5	11.3			7.6	15.3	7.6	15.3										
3 1/2 101.6							5.7	13.6	5.7	13.6			8.1	18.6	8.1	18.6										
4 114.3							6.0	16.1	6.0	16.1			8.6	22.3	8.6	22.3			11.1	28.3						
5 141.3							6.6	21.8	6.6	21.8			9.5	30.9	9.5	30.9			12.7	40.2						
6 168.3							7.1	28.2	7.1	28.2			11.0	42.5	11.0	42.5			14.3	54.2						
8 219.1							8.2	42.5	8.2	42.5	10.3	53.1	12.7	64.6	12.7	64.6	15.1	75.8	18.3	90.7	20.6	101	23.0	112.0	22.2	108.0
10 273.0							9.3	60.2	9.3	60.2	12.7	81.5	12.7	81.5	15.1	95.8	18.3	115.0	21.4	133.0	25.4	155	28.6	172.0	25.4	155.0
12 323.9							9.5	73.8	10.3	79.7	14.3	109.0	12.7	97.4	17.4	132.0	21.4	160.0	25.4	187.0	28.6	208	33.3	239.0	25.4	187.0
14 355.6	6.4	54.6	7.9	68.1	9.5	81.2	9.5	81.2	11.1	94.3	15.1	126.0	12.7	107.0	19.0	158.0	23.8	195.0	27.8	224.0	31.8	253	35.7	281.0		
16 406.4	6.4	62.6	7.9	77.9	9.5	93.1	9.5	93.1	12.7	123.0	16.7	160.0	12.7	123.0	21.4	203.0	26.2	245.0	30.9	286.0	36.5	333	40.5	365.0		
18 457.2	6.4	70.5	7.9	87.8	11.1	122.0	9.5	105.0	14.3	156.0	19.0	206.0	12.7	139.0	23.8	254.0	29.4	310.0	34.9	363.0	39.7	408	45.2	459.0		
20 508.0	6.4	78.5	9.5	117.0	12.7	155.0	9.5	117.0	15.1	183.0	20.6	248.0	12.7	155.0	26.2	311.0	32.5	381.0	38.1	441.0	44.4	508	50.0	564.0		
22 558.8	6.4	86.4	9.5	129.0	12.7	171.0	9.5	129.0			22.2	294.0	12.7	171.0	28.6	373.0	34.9	451.0	41.3	526.0	47.6	6000	54.0	671.0		
24 609.6	6.4	94.7	9.5	141.0	14.3	210.0	9.5	141.0	17.4	255.0	24.6	355.0	12.7	187.0	30.9	441.0	38.9	547.0	45.0	639.0	52.4	719.0	59.5	807.0		
26 660.4	7.9	128.0	12.7	203.0			9.5	153.0					12.7	203.0												
28 711.2	7.9	138.0	12.7	219.0	15.9	272.0	9.5	165.0					12.7	219.0												
30 762.0	7.9	147.0	12.7	234.0	15.9	292.0	9.5	176.0					12.7	234.0												
32 812.8	7.9	157.0	12.7	250.0	15.9	312.0	9.5	188.0					12.7	250.0												
34 863.6	7.9	167.0	12.7	266.0	15.9	332.0	9.5	200.0					12.7	266.0												
36 914.4	7.9	177.0	12.7	282.0	15.9	351.0	9.5	212.0					12.7	281.0												



SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

CARBON STEEL, ALLOY STEEL LOW TEMP, PIPE AND TUBE SPECIFICATION

CHEMICAL									MECHANICAL PROPERTIES			SPECIFIC REQUIREMENT
									TENSILE STRENGTH	YIELD STRESS	ELONGATION	
SPECIFICATION	WT	C %	Mn %	P % MAX	S % Max	Si %	Cr %	Mo %	Mpa	MPa	50mm MIN Longitudinal	
ASTM A53/A	AW	0.25MAX	0.95MAX	0.050	0.045	-	-	-	330 MIN	250 MIN	36	Cr Mo Cu Ni VA 40 15 40 40 08 Five elements not to exceed 1%
ASTM A53/B	AW	0.30MAX	0.120MAX	0.050	0.045	-	-	-	415MIN	240 MIN	29/5	
ASTM/A 106/A	AW	0.25MAX	0.27-0.93	0.035	0.025	0.10 MIN	0.40 MAX	0.15 MAX	330 MIN	205 MIN	35/2	
ASTM A106/B	AW	0.30MAX	0.29-1.06	0.035	0.035	0.10 MIN	0.40 MAX	0.15 MAX	415 MIN	240 MIN	30/22	
ASTM A 106/C	AW	0.35MAX	0.29-1.06	0.035	0.035	0.10 MIN	0.40 MAX	0.15 MAX	485 MIN	275 MIN	30/22	
ASTM A179	MW	0.06-0.18	0.27-0.63	0.035	0.035	-	-	-	325 MIN	180 MIN	35.0	Hardness 72 hrv Max
ASTM A214	MW	0.18MAX	0.27-0.63	0.035	0.035	-	-	-	385 MIN	180 MIN	35.0	Hardness 72 hrv Max
ASTM A192	MW	0.06-0.18	0.27-0.63	0.035	0.035	0.25 MAX	-	-	325 MIN	180 MIN	35.0	Hardness 77 hrv Max
ASTM A209/T1	MW	0.100.20	0.30-0.80	0.025	0.025	0.10-0.50	-	0.44-0.65	380 MIN	205 MIN	30/22	Hardness 80 hrv Max
ASTM A209/T1a	MW	0.15-0.25	0.30-0.80	0.025	0.025	0.10-0.50	-	0.44-0.65	365 MIN	195 MIN	30/22	Hardness 81 hrv Max
ASTM A209/T 1b	MW	0.14MAX	0.30-0.80	0.025	0.025	0.10-0.50	-	0.44-0.65	415 MIN	220 MIN	30/22	Hardness 77 hrv Max
ASTM A210A-1	MW	0.27MAX	0.93MAX	0.035	0.035	0.10 MIN	-	-	415 MIN	255 MIN	30/22	Hardness 79 hrv Max
ASTM A210/C	MW	0.35MAX	0.23-1.06	0.035	0.035	0.10 MIN	-	-	485 MIN	275 MIN	30/22	Hardness 89 hrv Max
ASTM A213/T2	MW	0.100.20	0.30-0.61	0.025	0.025	0.10-0.30	0.50-0.81	0.44-0.65	415 MIN	205 MIN	30/22	Hardness 85 hrv Max
ASTM A213/T5	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50 MAX	4.00-6.00	0.44-0.65	415 MIN	205 MIN	30/22	Hardness 85 hrv Max
ASTM A213/T11	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	1.00-1.50	0.44-0.65	415 MIN	205 MIN	30/22	Hardness 85 hrv Max
ASTM A213/T12	0.05	0.15MAX	0.30-0.61	0.025	0.025	0.50MAX	0.80-1.25	0.44-0.65	415 MIN	220 MIN	30/22	Hardness 85 hrv Max
ASTM A213/T22	0.05	0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	1.90-1.60	0.87-1.13	415 MIN	205 MIN	30/22	Hardness 85 hrv Max
ASTM A333/3	A W	0.19MAX	0.31-0.64	0.025	0.025	0.18-0.37	Ni	3.18-3.82	380 MIN	205 MIN	35/25	Impact as-50f for 40x10 j18/14 50 f 40 x 10 j 18/14 90 hrb mx
ASTM A333/6	A W	0.30MAX	0.29-1.06	0.025	0.025	0.10 MIN	-	-	415 MIN	240 MIN	30/22	
ASTM A334/3	A W	0.19MAX	0.31-0.64	0.025	0.025	0.18-0.37	Ni	3.18-3.82	380 MIN	205 MIN	35/28	
ASTM A334/6	MW	0.30MAX	0.9-1.06	0.025	0.025	0.10MIN	-	-	415 MIN	240 MIN	30/22	
ASTM A335/P1	A W	0.10-0.20	0.30-0.80	0.025	0.025	0.10-0.50	-	0.40-0.65	380 MIN	205 MIN	30/22	
ASTM A335/P2	A W	0.100-.20	0.30-0.61	0.025	0.025	0.10-0.30	0.50-0.81	0.40-0.65	380 MIN	205 MIN	30/22	
ASTM A335/P5	A W	0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	4.00-6.00	0.40-0.65	415 MIN	205 MIN	30/22	
ASTM A335/P11	0.05	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	1.00-1.50	0.400-0.65	415 MIN	205 MIN	30/22	
ASTM A335/P12	0.05	0.15MAX	0.30-0.61	0.025	0.025	0.50MAX	0.80-1.25	0.40-0.65	415 MIN	205 MIN	50/22	
ASTM A335/P22	0.05	0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	1.90-2.60	0.87-1.13	415 MIN	205 MIN	30/22	
BS/3059/1/33		0.15MAX	0.30-0.70	0.050	0.050	-	-	-	324-441	186 MIN	25	
BS/3059/2/33		0.15MAX	0.400-70	0.050	0.050	0.10-0.35	-	-	324-441	186 MIN	21	
BS/3059/2/45		0.120.18	0.90-1.20	0.035	0.035	0.10-0.35	-	-	441-560	245 MIN	22	
BS/3059/2/620		0.100.15	0.40-0.70	0.040	0.040	0.10-0.35	0.70-1.10	0.45-0.65	441-618	235 MIN	22	
DIN/17175/ST35.8		0.17MAX	0.40MIN	0.040	0.040	0.35MAX	-	-	340-441	235 MIN	25	
DIN/17175/ST45.8		0.22MAX	0.45MIN	0.040	0.040	0.10-0.35	-	-	441-540	255 MIN	25	
DIN/17175/15MO3		0.120.20	0.50-0.80	0.040	0.040	0.10-0.35	-	0.250-0.35	441-540	284 MIN	21	
DIN/17175/13CrMo44		0.10-0.18	0.40-0.70	0.040	0.040	0.100.35	0.70-1.60	0.40-0.50	441-570	294 MIN	22	
DIN/17175/10CrMo910		0.15MAX	0.40-0.60	0.040	0.040	0.15-0.50	2.0-2.5	0.9-1.10	441-570	294 MIN	22	
ASTM A199/T5	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	4.00-6.00	0.45-0.65	415 MIN	170 MIN	30/22	HARDNESS 85 HRB MAX
ASTM A199/T11	MW	0.05-0.15	0.30-0.60	0.025	0.025	0.50-1.00	1.00-1.50	0.44-0.65	415 MIN	170 MIN	30/22	HARDNESS 85 HRB MAX
ASTM A199/T22	MW	0.05-0.15	0.30-0.60	0.025	0.025	0.50MAX	1.90-2.60	0.87-1.13	415 MIN	170 MIN	30/22	HARDNESS 85 HRB MAX
ASTM A199/T4	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	2.15-2.85	0.44-0.65	415 MIN	170 MIN	30/22	HARDNESS 85 HRB MAX
ASTM A199/T7	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	6.00-8.00	0.45-0.65	415 MIN	170 MIN	30/22	HARDNESS 85 HRB MAX
ASTM A200/T5	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	4.00-6.00	0.45-0.65	415 MIN	170 MIN	30/22	HARDNESS 85 HRB MAX
ASTM A200/T11	MW	0.05-0.15	0.30-0.60	0.025	0.025	0.50-1.00	1.00-1.50	0.44-0.65	415 MIN	170 MIN	30/22	HARDNESS 85 HRB MAX
ASTM A200/T22	MW	0.05-0.15	0.30-0.60	0.025	0.025	0.50MAX	1.90-2.60	0.87-1.13	415 MIN	170 MIN	30/22	HARDNESS 85 HRB MAX
ASTM A200/T4	MW	0.05-0.15	0.30-0.60	0.025	0.025	0.50-1.00	2.15-2.852	0.44-0.85	415 MIN	170 MIN	30/22	HARDNESS 85 HRB MAX
ASTM A200/T7	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	6.00-8.00	0.45-0.65	415 MIN	170 MIN	30/22	HARDNESS 85 HRB MAX
ASTM A199/T9	MW	0.15MAX	0.30-0.60	0.025	0.025	0.25-1.00	8.00-1.00	0.90-1.10	415 MIN	170 MIN	30/22	HARDNESS 85 HRB MAX
ASTM A200 T9	MW	0.15MAX	0.30-0.60	0.025	0.025	0.25-1.00	8.00-1.00	0.90-1.10	415 MIN	170 MIN	30/22	HARDNESS 89 HRB MAX
ASTM A213/T9	MW	0.15MAX	0.30-0.60	0.025	0.025	0.25-1.00	8.00-100	0.90-1.10	415 MIN	170 MIN	30/22	HARDNESS 89 HRB MAX
ASTM A335/P9	MW	0.15MAX	0.30-0.60	0.025	0.025	0.25-1.00	8.00-10.00	0.090-1.10	415 MIN	172 MIN	30/22	HARDNESS 89 HRB MAX
ASTM A178 A	MW	0.06-0.18	0.27-0.63	0.035	0.035	-	-	-	325 MIN	180 MIN	35	
ASTM A178 C	MW	0.35MAX	0.80 MAX	0.035	0.035	-	-	-	415 MIN	255 MIN	30	
ASTM A178 B	MW	0.27MAX	10-1.5	0.030	0.015	0.10 MIN	-	-	485 MIN	275 MIN	30	



SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

EN SERIES STEEL

E.N. No.	Type and Application	Chemical composition & max						Physical Properties min			Limiting Size (diameter or width) Across Plats)	Condition	Brinell No.
		C	Mn	Ni	Cr.	Mo.	Others	T.I t/sq	El %	Izod ft.lbs			
IA	Free cutting machining Steel for low duty bolts, nuts, studs etc	.07/.15	.80/1.20	-	-	-	s. 2/3 P. .07 Si. .10	32 28 25 23 23	10 14 14 14 26	- - - - -	17/32" and less Over 17/32" to 1-1/2" Over 1-1/2" to 2 1/2" Over 2 1/2" to 4" 4" Other finishes	Cold rolled or Cold drawn	-
3	20 CARBON STEEL for aircraft sockets Plug ends, lightly stressed levers, bolts nuts	.25	1.0	-	-	-	S & P .06 Si .05/.35	25/35	25	-	6"	As rolled	-
3B	20 CARBON STEEL Cold drawn	.25	1.0	-	-	-	S & P .06 Si. .35	28	25	-	-	Normalised	-
8	40 CARBON STEEL without grain size control. For motor connecting rods, crankshafts, bolts and machine details in general.	.35/.45	.6/1.0	-	-	-	Si .06/.36 S & P .06	35 Q 40 H 45 35 Q 40 R 45	20 20 20 17 17 17	- 10 10 - - -	6" 2 1/2" 7/8" 6" 2 1/2" 7/8"	Normalized H & T H & T N & CD H & T & CD H & T & CD	152/207 179/229 201/255 152/207 169/229 201/255
8M	40 Carbon Steel. Free cutting	.35/45	.9/1.30	-	-	-	S. .12/.20 P. .06 Si. .25	35 Q 40 R 45 38	20 22 20 12	- 25 40 -	6" 2" 1/2" 1 1/2" max	Normalised H & T H & T Cold drawn	152/207 179/229 201/255 229/ max
16	Manganese-Molybdenum steel, suitable for tensile ranges of 45/75 tons according to the ruling section.	.30/.40	1.3/1.8	-	-	.20/.35	S & P. .05	R. 45 S. 50 T. 55 U. 60 V. 65	22 20 18 17 16	40 40 40 35 35	6" 4" 2.1/2" 1.1/8" 7/8"	H & T H & T H & T H & T H & T	201-255 223-277 248-302 269-321 293-341
18	1 percent Chromium Steel, suitable for tensile ranges of 45/65 tons according to the ruling section	.35/45	.60/.95	-	.85/1.15	-	S. & P. .05	R. 45 S. 50 T. 55	22 20 18	40 40 40	4" PS 32 2 1/2" " 36 1.1/8" " 4.1	H & T H & T H & T	201/255 223/277 248/302



SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

EN SERIES STEEL

E.N. No.	Type and Application	Chemical composition & max						Physical Properties min			Limiting Size (diameter or width) Across Plates)			Condition	Brinell No.
		C	Mn	Ni	Cr.	Mo.	Others	T.I t/sq	El %	Izod ft.lbs					
19	1 percent chromium Molybdenum steel Suitable for tensile ranges of 45/80 tons according to the ruling section of the part	.35/.45	.50/.80	-	.90 1.50	.2/4	S & P .05 Si .010/.35	R. 45 S. 50 T. 55 U. 60 V. 65 W. 70 Y. 80	22 20 18 17 16 15 10	40 40 40 35 35 30 10	6" PS 32 4" - 36 2 1/2" - 41 2 1/2" - 46 1.1/8" - 50 1. 1/8" - 55 1" - 64	H & T H & T H & T H & T H & T H & T H & T	201/255 223/177 248/302 269/321 293/341 311/375 363/415		
24	1 1/2 percent Nickel-Chromium Molybdenum steel. Suitable for tensile ranges of 50/100 tons according to the ruling section of the part.	.35/.45	.45/.7	1.3/ 1.8	.9/1.4	.2/35	Si. 10/35 S. P 0.05	S. 50 T. 55 U. 60 V. 65 W. 70 X. 75 Y. 80 Z.100	20 18 17 16 15 14 14 8	40 40 35 35 30 25 25 8	6" PS 36 6" - 41 4" - 46 2 1/2" - 50 1.1/8" - 55 1.1/8" - 59 1.1/8" - 64 1.1/8" - 80	H & T H & T H & T H & T H & T H & T H & T H & T	223/277 248/302 269/321 293/341 311/375 341/388 363/415 444 Min		
31	1 percent Carbon Chromium steel For parts of maximum hardness such as ball races.	.9/1.2	.3/.75	-	1/1.6	-	S.& P. .05 Si. .10/.35	-	-	-	-	-	-	-	
36A	3 percent Nickel- Chromium	.15	.3/.6	3/3.75	.6/1.1	-	Si .10/.35	55	15	35	-	-	-	-	
36B	Case- hardening steel	.12/.18	.3/.6	3/3.75	.6/1.1	-	-	65	13	30	-	-	-	-	
36C	3 percent Nickel Chromium Molybdenum Case Hardening steel	.12/.18	.3/.6	3/3.75	.6/1.1	.1/25	Si .10/.35	65	13	30	-	-	-	-	
41A	1-1/2 percent Chromium aluminium Molybdenum Nitriding steel	.25/.35	.65	.40	1.4/ 1.8	.1/25	Si .1/.45 AL .9/1.3 S. & P. .05	R. 45 S. 50 T. 55	20 19 17	40 40 35	6" 4" 2 1/2"	H & T H & T H & T	201/255 223/277 246/302		
41B	As above (EN, 41 A)	.35/.45	.65	.40	1.4/ 1.8	.1/25	Si. .1/.45 S. & P. .05 AL .9/1.3	R. 45 S. 50 T. 55	20 19 17	40 40 35	-	H & T H & T H & T	201/255 223/277 248/302		
42	Carbon spring steel for oil Hardening and tempering. Suitable for laminated and coil springs.	.7/.85	.55/.75	-	-	-	Si. .1/.40 S. & P. .05	-	-	-	-	-	-		
47	1 percent Chromium-Vanadium spring steel for oil hardening and tempering.	.45/.55	.5/.8	-	.8/1.2	-	Va. .15 min Si. .50 S. & P. .05	-	-	-	-	-	-		
353	1 1/4 percent, Nickel Chromium Case Hardening steel	20	.50/1.0	1.0/ 1.5	.75/ 1.25	.08/ .15	Si. .35 S. & P. .05	65	12	20	-	-	-		
354	1-3/4 percent Nickel-Chromium Molybdenum Case-Hardening steel.	20	.50/1.0	1.5/ 2.0	.75/ 1.25	.10/ .20	Si. .35 S. & P. .05	75	12	20	-	-	-		

SIGNS AND ABBREVIATIONS

H & T	Hardened and Tempered	CD	Cold drawn.
CR	Cold Rolled.	PS	Proof Stress.
N.	Normalised	<	Maximum



SYNDICATE Metal & Alloys

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.

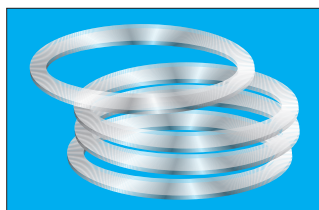
TEL.: 022-2389 3286 / 6639 4875 • E-mail : syndicatebm@gmail.com / sales@syndicatemetals.in • Website : www.syndicatemetals.in

BUSINESS FORMULA

COMPETITIVE PRICE + SPECIFIED MATERIAL + TIME BOUND DELIVERY = INCREASING BUSINESS

FORMULAE

- 1) **WEIGHT OF STAINLESS STEEL PIPES & TUBES**
 $OD \text{ (mm)} - W.T. \text{ (mm)} \times W.T. \text{ (mm)} \times 0.02466 = \text{kg. per Mtr.}$
- 2) **SHEET WIDTH REQUIRED FOR ROLLED AND WELDED PIPES**
 $O.D. \text{ (mm)} - THK \text{ (mm)} \times 3.14 = \text{Sheet Width}$
- 3) **WEIGHT OF STAINLESS STEEL SHEETS**
 $\text{Length (mtr)} \times \text{Wdth (mtr)} \times \text{Thk (mm.)} \times 8 = \text{Kg Per Sheet}$
- 4) **WEIGHT OF STAINLESS STEEL CIRCLE & BLANKS**
 $O.D. \text{ (mm)} \times O.D. > \text{ (mm)} \times \text{Thk (mm)} / 160/1000 = \text{kg Per Pcs.}$
- 5) **WEIGHT OF STAINLESS STEELS ROUNDS**
 $Dia. \text{ (mm)} \times Dia \text{ (mm)} \times 0.00623 = \text{Per Mtr.}$
- 6) **WEIGHT OF STAINLESS STEEL HEXAGONAL RODS**
 $Dia. \text{ (mm)} \times Dia. \text{ (mm)} \times 0.00679 = \text{Per Mtr.}$
- 7) **WEIGHT OF STAINLESS STEEL SQUARE BARS**
 $Dia. \text{ (mm)} \times Dia \text{ (mm)} \times 0.00787 = \text{kg. Per Mtr}$
- 8) **WEIGHT OF CARBON STEEL PIPES & TUBES**
 $O.D. \text{ (mm)} - W.T. \text{ (mm)} \times W.T. \text{ (mm)} \times 0.02466 = \text{kg. per Mtr.}$
- 9) **WEIGHT OF CARBON STEEL SHEETS-PLATES**
 $\text{Length (mtr.)} \times \text{width (mtr)} \times \text{Thk (mm)} \times 7.85 = \text{Kg Per Sheet}$
- 10) **WEIGHT OF COPPER PIPES**
 $O.D. \text{ (mm)} - W.T. \text{ (mm)} \times W.T. \text{ (mm)} \times 0.0256 = \text{Kg. per Mtr.}$
- 11) **WEIGHT OF LEAD PIPES (approx.)**
 $O.D. \text{ (mm)} - W.T. \text{ (mm)} \times W.T. \text{ (mm)} \times 0.0345 = \text{Kg. Per Mtr.}$
- 12) **WEIGHT OF LEAD SHEETS (approx.)**
 $\text{Length (mtr.)} \times \text{Width (mtr.)} \times \text{Thk (mm)} \times 11.2 = \text{kg Per Sheet}$
- 13) **WEIGHT OF ALLUMINIUM PIPES (approx.)**
 $O.D. \text{ (mm)} - W.T. \text{ (mm)} \times W.T. \text{ (mm)} \times 0.0082 = \text{Kg. Per Mtr.}$
- 14) **WEIGHT OF ALLUMINIUM SHEETS (approx.)**
 $\text{Length (mtr.)} \times \text{Width (mtr.)} \times \text{Thk (mm)} \times 2.66 = \text{Kg Per Sheet}$



APPLICATION INDUSTRIES



PAPER MILLS



POWER HOUSE



FERTILIZER PLANT



DAM PROJECT



PETROCHEMICAL INDUSTRIES



STEEL PLANT



SUGAR PLANT



OFFSHORE PLATFORM



PHARMACEUTICAL PLANT

B.M. PATEL
09322697885 / 09869999947
syndicatebm@gmail.com

C.B.PATEL
09323888885
syndicatecb@gmail.com



SYNDICATE Metal & Alloys

IMPORTERS • STOCKIST • MFG OF :

Suppliers of : Stainless Steel, Carbon Steel, Tubes, Pipes & Pipe Fittings, Sheet, Plates, Rods, Ferrous & Non Ferrous Metals

34/46, SONARIKA BUILDING, 25-C, NANUBHAI DESAI ROAD, C.P. TANK, GIRGAON, MUMBAI - 400 004.
TEL.: 022-2389 3286 / 6639 4875 • **E-mail :** syndicatebm@gmail.com / sales@syndicatemetals.in • **Website :** www.syndicatemetals.in

Factory : B-13, Gayatri Industrial Estate, Bhikshukgruh Road, Odhav, Ahmedabad - 382 415 (Guj.)

Godown : Plot No. 32 A , 26,Asmita Co-Op HSG SOC. Ltd, Sector-12, Kharghar Navi Mumbai-410210 (Mah.)