SPECIALIST OF EXOTIC ALLOYS LIKE HASTELLOY | NIMONIC | ALLOY 20 | TITANIUM |DUPLEX | MONEL & STAINLESS STEEL Etc...

RAJDEEP METAL DISTRIBUTORS

RAJDEEP METALS DISTRIBUTORS

Upholding Worldwide Reputation For

QUALITY & SERVICE

- FLANGES
- FASTNERS
- FITTINGS

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www : rmdstainless.com

COMPANY PROFILE

Rajdeep Metals Distributors is the Stockist and Supplier of Pipe, Tube, Sheet , Plate and Rod in Materials like Stainless Steel, Carbon Steel , Alloy Steel, Mild Steel, Copper, Brass and Aluminium etc. We also manufacture and supply non - standard items if any material to customers specifications.

We are committed to serve your Organizations Sourcing Needs of the above Products with our quality products as well as our service , which is future strengthened by our well established in house infrastructure capabilities and capacities plus comprehensive stock of raw material and finished products. We are growing organization having strong work force of skilled, experienced and qualified employees.

Over the years, the company has excelled in experience and deep understanding of diversified business needs in various industries and in supplying quality materials for new projects, expansion, shutdown applications, maintenance to name a few.

Continuous improvements is a way of life.
We have a very ambitious plants to expand our activities & further build good source to improve quality and reduce costing with fastest delivery, looking at the huge demand of our products .

SERVICES :

- Plasma, laser and water jet cutting.
- Tailor made products in high performance alloys and stainless steel according to customer drawing and specification.
- Welding, Forging, Rolling, Polishing and Drawing
- PMI & Spectro
- Packaging & Forwarding
- Reserved Inventories
- Decoiling and Slitting of coils.

FLANGES

We are one of the leading manufacturers and exporter of wide range of Flanges in various Grades and sizes for different applications in petrochemicals, refineries, chemical industry, water works, engineering & construction works. Owning to its high quality, optimum performance, less maintenance, our range of flanges are appreciated by our clients and are available in various material configurations like High Nickel Alloys, Duplex, Super Duplex, Stainless Steel, Carbon Steel, Alloy Steel and Copper Alloys. Based on the sizes, dimensions, shapes and length of these flanges, we can customize the products for our respected clients and in following material of construction.

● Nickel Alloy ● Stainless Steel ● Duplex Steel / Super Duplex

Stainless Steel & Duplex Steel Flanges

Size : ½"NB to 24" NB, ANSI B 16.5
Class : 150#, 300#, 600#, 900#, 1500#, 2500#
Stainless Steel : ASTM A TP 304/304L/304H/316/316L/ 316H / 316Ti / 309 / 310 / 317L / 321/347/904L
Duplex Steel : ASTM A 815- UNS S31803, S32750, S32760, S32205

Alloy Steel, Carbon Steel & LTCS Flanges

Alloy Steel : ASTM A 182-F5, F9, F11, F12, F22 & F91 / **Low temp. AS** A 350 Lf2.
Carbon Steel : ASTM A 105 ASTM A 694 F42, F46, F52, F60, F65, F70

Copper & Nickel Alloys Flanges

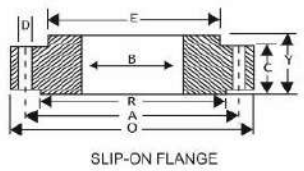
Cupro Nickel : C70600(90:10), C71500 (70:30), C71640
Nickel : UNS N02200, N02201
Monel : UNS N04400, N05500, Alloy 20
Inconel : UNS N06600, N06601, N06625, N08800, N08810
Hastelloy : UNS N10276, N06022, N10665, N06455
Titanium : Gr. 2 & 5, DTH 3.7025, DTH 3.7055

TYPE

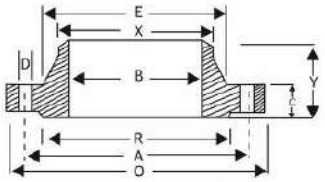
- PLATE BLANK FLANGE
- LAP JOINT FLANGE
- WELDNECK FLANGE
- ORIFICE FLANGE
- LONG WELD NECK FLANGE
- SCREWED FLANGE
- SOCKETWELD FLANGE
- BLIND FLANGE
- RTJ FLANGE
- THREADED FLANGE

DIMENSIONS OF FORGED FLANGES AS PER ANSI 16.5

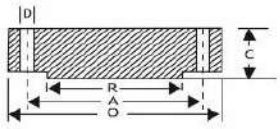
FLANGES CLASS 150 & 300



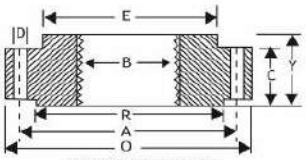
SLIP-ON FLANGE



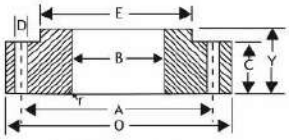
WELDING NECK FLANGE



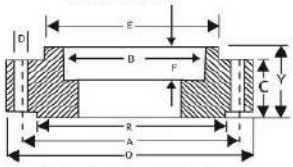
BLIND FLANGE



THREADED FLANGE



LAP JOINT FLANGE



SOCKET WELD FLANGE

DIMENSIONS OF CLASS150 FLANGES AS PER B16.5

Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	No. Of Bolt Holes	No. Of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia Bore		Dia of R/F	Depth of Socket	Pipe Dia
							S / O & S / W	W/N	L/J	S/O & S/W	L/J			
	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	88.9	60.3	15.9	4	11.1	30.2	15.9	47.6	15.9	22.3	22.9	34.9	9.5	21.33
20	98.4	69.8	15.9	4	12.7	38.1	15.9	52.4	15.9	27.7	28.2	42.9	11.1	26.67
25	107.9	79.4	15.9	4	14.3	49.2	17.5	55.6	17.5	34.5	35.0	50.8	12.7	33.40
32	117.5	88.9	15.9	4	15.9	58.7	20.6	57.1	20.6	43.2	43.7	63.5	14.3	42.16
40	127.0	98.4	15.9	4	17.5	65.1	22.2	61.9	22.2	49.5	50.0	73.0	15.9	48.26
50	152.4	120.6	19.0	4	19.0	77.8	25.4	63.5	25.4	62.0	62.5	92.1	17.5	60.31
65	177.8	139.7	19.0	4	22.2	90.5	28.6	69.8	28.6	74.7	75.4	104.8	19.0	73.02
80	190.5	152.4	19.0	4	23.8	107.9	30.2	69.8	30.2	90.7	91.4	127.0	20.6	88.90
100	228.6	190.5	19.0	8	23.8	134.9	33.3	76.2	33.3	116.1	116.8	157.2	23.8	114.30
125	254.0	215.9	22.2	8	23.8	163.5	36.5	88.9	36.5	143.8	144.5	185.7	23.8	141.30
150	279.4	241.3	22.2	8	25.4	192.1	39.7	88.9	39.7	170.7	171.4	215.9	27.0	168.27
200	342.9	298.4	22.2	8	28.6	246.1	44.4	101.6	44.4	221.5	222.2	269.9	31.7	219.07
250	406.4	361.9	25.4	12	30.2	304.8	49.2	101.6	49.2	276.3	277.4	323.8	33.3	273.05
300	482.6	431.8	25.4	12	31.8	365.1	55.6	114.3	55.6	327.1	328.2	381.0	39.7	323.85
350	533.4	476.2	28.6	12	34.9	400.0	57.1	127.0	79.4	359.1	360.2	412.7	41.3	355.60
400	596.9	539.7	28.6	16	36.5	457.2	63.5	127.0	87.3	410.5	411.2	469.9	44.4	406.40
450	635.0	577.8	31.7	16	39.7	504.8	68.3	139.7	96.8	461.8	462.3	533.4	49.2	457.20
500	698.5	635.0	31.7	20	42.9	558.8	73.0	144.5	103.2	513.1	514.3	584.2	54.0	508.00
600	812.8	749.3	34.9	20	47.6	663.6	82.5	152.4	111.1	615.9	615.9	692.1	63.5	609.60

DIMENSIONS OF CLASS 300 FLANGES AS PER B16.5

Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	No. Of Bolt Holes	No. Of Holes	Thk of Flange	Dia of Hub	Length through Hub			Dia Bore		Dia of R/F	Depth of Socket	Pipe Dia
							S / O & S / W	W/N	L/J	S/O & S/W	L/J			
	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	95.2	66.7	15.9	4	14.3	38.1	22.2	52.4	22.2	22.3	22.9	34.9	9.5	21.33
20	117.5	82.5	19.0	4	15.9	47.6	25.4	57.1	25.4	27.7	28.2	42.9	11.1	26.67
25	123.8	88.9	19.0	4	17.5	54.0	27.0	61.9	27.0	34.5	35.0	50.8	12.7	33.40
32	133.3	98.4	19.0	4	19.0	63.5	27.0	65.1	27.0	43.2	43.7	63.5	14.3	42.16
40	155.6	114.3	22.2	4	20.6	69.8	30.2	68.3	30.2	49.5	50.0	73.0	15.9	48.26
50	165.1	127.0	19.0	8	22.2	84.1	33.3	69.8	33.3	62.0	62.5	92.1	17.5	60.31
65	190.5	149.2	22.2	8	25.4	100.0	38.1	76.2	38.1	74.7	75.4	104.8	19.0	73.02
80	209.5	168.3	22.2	8	28.6	117.5	42.9	79.4	42.9	90.7	91.4	127.0	20.6	88.90
100	254.0	200.0	22.2	8	31.8	146.0	47.6	85.7	47.6	116.1	116.8	157.2	23.8	114.30
125	279.4	234.9	22.2	8	34.9	177.8	50.8	98.4	50.8	143.8	144.5	185.7	-	141.30
150	317.5	269.9	22.2	12	36.5	206.4	52.4	98.4	52.4	170.7	171.4	215.9	-	168.27
200	381.0	330.2	25.4	12	41.3	260.3	61.9	111.1	61.9	221.5	222.2	269.9	-	219.07
250	444.5	387.3	28.6	16	47.6	320.7	66.7	117.5	95.2	276.3	277.4	323.8	-	273.05
300	520.7	450.8	31.7	16	50.8	374.6	73.0	130.2	101.6	327.1	328.2	381.0	-	323.85
350	584.2	514.3	31.7	20	54.0	425.4	76.2	142.9	111.1	359.1	360.2	412.7	-	355.60
400	647.7	571.5	34.9	20	57.2	482.6	82.5	146.0	120.6	410.5	411.2	469.9	-	406.40
450	711.2	628.5	34.9	24	60.3	533.4	88.9	158.7	130.2	461.8	462.3	533.4	-	457.20
500	774.7	685.8	34.9	24	63.5	587.4	95.2	161.9	139.7	513.1	514.3	584.2	-	508.00
600	914.4	812.8	41.3	24	69.8	701.7	106.4	168.3	152.4	615.9	615.9	692.1	-	609.60

Metric values are direct conversion from Inches table of B16.5

Flanges except Lap Joint will be furnished with (1.6 mm) raised face, Which is included in " Thickness" (C) and Length Through Hub (Y).

BRITISH STANDARD PIPE FLANGES

DIMENSION OF PIPE FLANGES AS PER TABLE BS -10

Table D: For Working Steam Pressure upto 50 lbs per sq. inch

Nominal pipe size	O.D of Pipe	Dia. of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
½"	21.3	95.3	66.7	4	12.7	4.8
3/4"	26.7	101.6	73.0	4	12.7	4.8
1"	33.4	114.3	82.6	4	12.7	4.8
1 1/4"	42.2	120.7	87.6	4	12.7	6.4
1 1/2"	48.3	133.4	98.4	4	12.7	6.4
2"	60.3	152.4	114.3	4	15.9	7.9
2 ½"	73.0	165.1	127.0	4	15.9	7.9
3"	88.9	184.2	146.1	4	15.9	9.5
3 ½"	101.6	203.2	165.1	4	15.9	9.5
4"	114.3	215.9	177.8	4	15.9	9.5
5"	141.3	254.0	209.6	8	15.9	12.7
6"	168.3	279.4	228.6	8	15.9	12.7
7"	190.5	304.8	260.4	8	15.9	12.7
8"	219.1	336.6	292.1	8	15.9	12.7
9"	244.5	368.3	323.9	8	15.9	15.9
10"	273.0	406.4	355.6	8	19.1	15.9
12"	323.9	457.2	406.4	12	19.1	15.9
14"	355.6	527.1	469.9	12	22.2	19.1
16"	406.4	577.9	520.7	12	22.2	19.1
18"	457.2	641.4	584.2	12	22.2	22.2
20"	508.0	704.9	641.4	16	22.5	25.4
24"	609.6	825.5	755.7	16	25.4	28.6

Table E: For Working Steam Pressure 50 lbs. upto 100 lbs per sq. inch

Nominal pipe size	O.D of Pipe	Dia. of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
½"	21.3	95.3	66.7	4	12.7	6.4
3/4"	26.7	101.6	73.0	4	12.7	6.4
1"	33.4	114.3	82.6	4	12.7	7.1
1 1/4"	42.2	120.7	87.6	4	12.7	7.9
1 1/2"	48.3	133.4	98.4	4	12.7	8.7
2"	60.3	152.4	114.3	4	15.9	9.5
2 ½"	73.0	165.1	127.0	4	15.9	10.3
3"	88.9	184.2	146.1	4	15.9	11.1
3 ½"	101.6	203.2	165.1	8	15.9	11.9
4"	114.3	215.9	177.8	8	15.9	12.7
5"	141.3	254.0	209.6	8	15.9	14.3
6"	168.3	279.4	228.6	8	19.1	17.5
7"	190.5	304.8	260.4	8	19.1	19.1
8"	219.1	336.6	292.1	8	19.1	19.1
9"	244.5	368.3	323.9	12	19.1	20.6
10"	273.0	406.4	355.6	12	19.1	22.2
12"	323.9	457.2	406.4	12	22.2	25.4
14"	355.6	527.1	469.9	12	22.2	25.4
16"	406.4	577.9	520.7	12	22.2	25.4
18"	457.2	641.4	584.2	16	22.2	28.6
20"	508.0	704.9	647.4	16	22.2	31.8
24"	609.6	825.5	755.7	16	25.4	38.1

Table F: For Working Steam Pressure above 100 lbs and upto 150 lbs per sq. inch

Nominal pipe size	O.D of Pipe	Dia. of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
½"	21.3	95.3	66.7	4	12.7	9.5
3/4"	26.7	101.6	73.0	4	12.7	9.5
1"	33.4	120.7	87.3	4	15.9	9.5
1 1/4"	42.2	133,4	98.4	4	15.9	12.7
1 1/2"	48.3	139.7	104.8	4	15.9	12.7
2"	60.3	165.1	127.0	4	15.9	15.9
2 ½"	73.0	184.2	146.1	8	15.9	15.9
3"	88.9	203.2	165.1	8	15.9	15.9
3 ½"	101.6	215.9	177.8	8	15.9	19.1
4"	114.3	228.6	190.5	8	15.9	19.1
5"	141.3	279.4	235.0	8	19.1	22.2
6"	168.3	304.8	260.4	12	19.1	22.2
7"	190.5	336.3	292.1	12	19.1	22.2
8"	219.1	368.3	323.9	12	19.1	25.4
9"	244.5	406.4	355.6	12	22.2	25.4
10"	273.0	431.8	381.0	12	22.2	25.4
12"	323.9	489.0	438.2	16	22.2	28.6
14"	355.6	552.5	495.3	16	25.4	31.8
16"	406.4	609.6	552.5	20	25.4	31.8
18"	457.2	673.1	609.6	20	28.6	34.9
20"	508.0	736.6	673.1	24	28.6	38.1
24"	609.6	850.9	781.1	24	31.8	41.3

Table H: For Working Steam Pressure above 150 lbs and upto 250 lbs per sq. inch

Nominal pipe size	O.D of Pipe	Dia. of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
½"	21.3	114.3	66.7	4	15.9	12.7
3/4"	26.7	114.3	73.0	4	15.9	12.7
1"	33.4	120.78	87.3	4	15.9	14.3
1 1/4"	42.2	133,4	98.4	4	15.9	17.5
1 1/2"	48.3	139.7	104.8	4	15.9	17.5
2"	60.3	165.1	127.0	4	15.9	19.1
2 ½"	73.0	184.2	146.1	8	15.9	19.1
3"	88.9	203.2	165.1	8	15.9	22.2
3 ½"	101.6	215.9	177.8	8	15.9	22.2
4"	114.3	228.6	190.5	8	15.9	25.4
5"	141.3	279.4	235.0	8	19.1	28.6
6"	168.3	304.8	260.4	12	19.1	28.6
7"	190.5	336.6	292.1	12	19.1	31.8
8"	219.1	368.3	323.9	12	19.1	31.8
9"	244.5	406.4	355.6	12	22.2	34.9
10"	273.0	431.8	381.0	12	22.2	34.9
12"	323.9	489.0	438.2	16	22.2	38.1
14"	355.6	552.5	495.3	16	25.4	41.3
16"	406.4	609.6	552.5	20	25.4	44.5
18"	457.2	673.1	609.6	20	28.6	47.6
20"	508.0	736.6	673.1	24	28.6	50.8
24"	609.6	850.9	781.1	24	31.8	57.2

BUTT WELD FITTINGS THAT FITS EVERY NEED

TYPE OF BUTTWELD FITTINGS

- ELBOW (1D/1.5D/3D/5D)
- LONG STUB BEND
- REDUCER (CONCENTRIC/ECCENTRIC)
- MITER BENDS
- TEE (EQUAL /UNEQUAL)
- REDUCING TEE
- SHORT STUB BEND
- RETURN BENDS

Standards :
ASME B16.9, B16.28 & MSS SP-95 - 43

Stainless Steel & Duplex Steel Fittings

Size	: Upto 24'' NB / Welded Upto 64''
Schedule	: 10S/40S/80S/160S/XXS
Stainless Steel	: ASTM A 403 WP - TP 304/304L/304H/316/316L/ 316H / 316Ti / 309 / 310 / 317L / 321 / 347/904L
Duplex Steel	: ASTM A 815- UNS S31803, S32750, S32760, S32205

Alloy Steel, Carbon Steel & LTCS Fittings

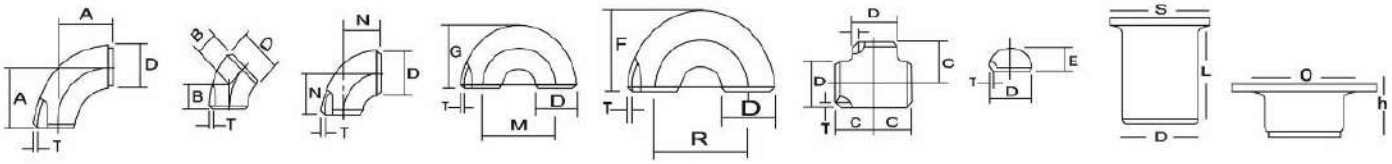
Size	: Upto 24'' NB / Welded Upto 64''
Schedule	: 10/40/60/XS/80/100/120/140/160/XXS
Alloy Steel	: ASTM A 234 WPB - WP5, WP9, WP11, WP12, WP22,WP91
Carbon Steel	: ASTM A234 WPB, A420 WPL3, A420 WPL6, MSS-SP-75 WPHY 42/46/52

Copper & Nickel Alloys Fittings

Size	: ½"NB to 8" NB Seamless & Welded upto 48" NB
Schedule	: 10S/40S/80S/160/XXS
CuproNickel	: C70600(90:10), C71500 (70:30), C71640
Nickel	: UNS N02200, N02201
Monel	: UNS N04400, N05500, Alloy 20
Inconel	: UNS N06600, N06601, N06625, N08800, N08810
Hastelloy	: UNS N10276, N06022, N10665, N06455

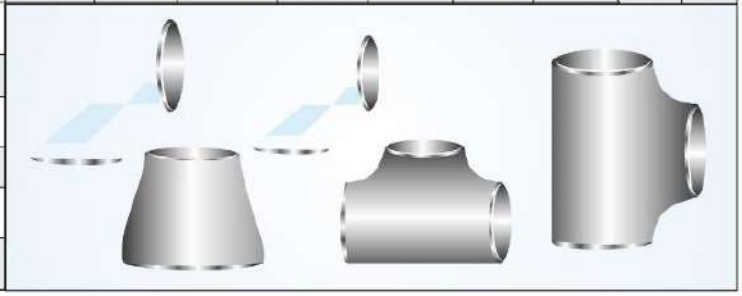
Types: Elbow (45Deg., 90 Deg., 180 Deg.)/Tee (Barred, Equal, reducing) /Reducer (Concentric & Eccentric) Coupling / Stubend /U bend /5D / 8D Bends / End Cap / Laterals

DIMENSIONS OF BUTT-WELDING FITTING ANSI B-16.9 / B-16.28 / MSS SP-43



90° Elbow Long Radius | 45° Elbow | 90° Elbow Short Radius | 180° Return Short Radius | 180° Return Long Radius | Tee Equal Tee | Caps | Stub-End | Short Stubends

Nominal Pipe Size		Outside Diameter	Center to Face				Back to Face			Center to Center			Length 'L' MSS SP 43 B16.9			
INCH	MM	D	A R=1.5D	B	C	N R=1D	E	F	G	R	M	S	Short L	Long L	O	H
1/2	15	21.3	38.00	16.0	25.0	-	25.0	48.0	-	76.0		35.0	50.8	76.2	42	8
3/4	20	26.7	29.00	11.0	29.0	-	25.0	43.0	-	57.0		43.0	50.8	76.2	52	8
1	25	33.4	38.00	22.0	38.0	25.0	38.0	56.0	41.0	76.0	51.0	51.0	50.8	101.6	62	10
1.1/4	32	42.2	48.00	25.0	48.0	32.0	38.0	70.0	52.0	95.0	64.0	64.0	50.8	101.6	72	12
1.1/2	40	48.3	57.15	29.0	57.0	38.0	38.0	83.0	62.0	114.0	76.0	73.0	50.8	101.6	82	12
2	50	60.3	76.00	35.0	64.0	51.0	38.0	106.0	81.0	152.0	102.0	93.0	63.5	152.4	98	16
2.1/2	65	73.0	95.25	44.0	76.0	64.0	38.0	132.0	100.0	191.0	127.0	105.0	63.5	152.4	118	16
3	80	88.9	114.30	51.0	86.0	76.0	51.0	159.0	121.0	229.0	152.0	127.0	63.5	152.4	130	18
3.1/2	90	101.6	133.35	57.0	95.0	89.0	64.0	184.0	140.0	267.0	178.0	140.0	76.2	152.4	140	18
4	100	114.3	152.0	64.0	105.0	102.0	64.0	210.0	159.0	305.0	203.0	157.0	76.2	152.4	158	20
5	125	141.3	190.0	79.0	123.0	127.0	76.0	262.0	197.0	381.0	254.0	186.0	76.2	203.2	188	25
6	150	168.3	229.0	95.0	143.0	152.0	102.0	313.0	237.0	457.0	305.0	218.0	88.9	203.2	215	25
8	200	219.1	305.0	127.0	178.0	203.0	89.0	414.0	313.0	610.0	406.0	270.0	101.6	203.2	270	30
10	250	273.1	381.0	159.0	216.0	254.0	102.0	515.0	391.0	762.0	508.0	324.0	127	254.0	325	30
12	300	323.8	457.0	190.0	254.0	305.0	127.0	619.0	467.0	914.0	610.0	381.0	152.4	254.0	380	35
14	350	355.6	533.0	222.0	279.0	356.0	152.0	711.0	533.0	1067.0	711.0	413.0	152.4	305.0	415	40
16	400	406.4	610.0	254.0	305.0	406.0	165.0	813.0	610.0	1219.0	813.0	470.0	152.4	305.0	470	40
18	450	457.2	686.0	286.0	343.0	457.0	178.0	914.0	686.0	1372.0	914.0	533.0	152.4	305.0	530	40
20	500	508.0	762.0	318.0	381.0	508.0	203.0	1016.0	762.0	1524.0	1016.0	584.0	152.4	305.0	585	40
22	550	559.0	838.0	343.0	419.0	559.0	229.0	1118.0	838.0	1676.0	1118.0	614.4	152.4	305.0	614	40
24	600	610.0	914.0	381.0	432.0	610.0	254.0	1219.0	914.0	1829.0	1219.0	692.0	152.4	305.0	692	40
26	650	660.0	991.0	405.0	495.0	660.0	267.0									
28	700	711.0	1067.0	438.0	521.0	771.0	267.0									
30	750	762.0	1143.0	470.0	559.0	762.0	267.0									
32	800	813.0	1219.0	502.0	597.0	813.0	267.0									
34	850	864.0	1295.0	533.0	635.0	864.0	267.0									
36	900	914.4	1372.0	565.0	673.0	914.0	267.0									



All Dimensions in Millimeters

HIGHLIGHTS OF ASTM SPECIFICATION STAINLESS STEEL TUBES AND PIPES

Specification	Allowable Outside Diameter Variation in mm			Allowable wall Thickness Variation		Exact Length Tolerences in mm		Testing
Specification	Diameter	Over	Under	Over %	Under%	Over	Under	Testing
ASTM A - 213 Seamless Boiler, Superheater and Heat Exchanger Tubes	Upto 25.4 25.4 - 38.1 incl. 38.1 - 50.8 excl. 50.8 - 63.5 encl. 63.5 - 76.2 excl. 76.2 - 101.6 incl.	0.1016 0.1524 0.2032 0.2540 0.3048 0.3810	0.1016 0.1524 0.2032 0.2540 0.3048 0.3810	+20 +20 +22 +22 +22 +22	-0 -0 -0 -0 -0 -0	3.175 3.175 3.176 3.760 4.760 4.760	0 0 0 0 0 0	Tension Test Flattening Test Hardness test 100% Hydrostatic Test Flare Test Refer to ASTM A-450
ASTM A - 249 Welded Boiler, Superheater, Heat Exchanger and Condenser Tubes	Under 25.4 25.4 -38.1 incl. 38.1 - 50.8 excl. 50.8 - 63.5 excl. 63.5 - 76.2 excl. 76.2 - 101.6 incl.	0.1016 0.1524 0.2032 0.2540 0.3048 0.3810	0.1016 0.1524 0.2032 0.2540 0.3048 0.3810	+10 +10 +10 +10 +10 +10	-10 -10 -10 -10 -10 -10	3.175 3.175 3.175 3.76 4.76 4.76	0 0 0 0 0 0	Tension Test, Fletting test Flare Test * Reverse Bend Test Hardness Test 100% Hydrostatic Test *Reverse Flattering Test Refer to ASTM A-450 Whenever applicable
ASTM A - 269 Seamless & Welded Service	Upto 12.7 12.7 -38.1 excl. 38.1 - 88.9 excl. 88.9 - 139.7 excl. 139.7 - 203.2 excl.	0.13 0.13 0.25 0.38 0.76	0.13 0.13 0.25 0.38 0.76	+15 +10 +10 +10 +10	-15 -10 -10 -10 -10	3.2 3.2 4.8 4.8 4.8	0 0 0 0 0	Tension Test Flange Test (Welded only) Hardness Test Reverse Flattening test (Welded only) 100% Hydrostatic Test Refer to ASTM A-269
ASTM A - 312 Seamless & Welded Pipes	13.7 - 48.3 incl. 48.3 - 114.3 incl. 114.3 - 220 incl.	0.40 0.79 1.59	0.79 0.79 0.79	Minimum Wall tubes 12.5% under nominal wall Specified		6.4 6.4 6.4 (Normally Random lengths ordered)	0 0 0	Tension Test Fletting Test 100% Hydrostatic Test
ASTM - 270 Seamless & Welded Sanitary Tubes	25.4 38.1 50.8 63.5 76.2 101.6	.05 .05 .05 .05 .08 .08	.20 .20 .28 .28 .30 .38	+12.5 +12.5 +12.5 +12.5 +12.5 +12.5	-12.5 -12.5 -12.5 -12.5 -12.5 -12.5	3.2 3.2 3.2 3.2 3.2 3.2	0 0 0 0 0 0	Reverse Flattering test 100% Hydrostatic test External polish on all tubes Refer to ASTM A-270
ASTM A - 268 Seamless & Welded Femtic Stainless Steel tubes	Upto 12.7 12.7 - 38.1 excl. 38.1 - 88.9 excl. 88.9 - 168.9 excl.	0.13 0.13 0.25 0.38	0.13 0.13 0.25 0.38	+15 +10 +10 +10	-15 -10 -10 -10	3.2 3.2 4.8 4.8	0 0 0 0	Tension Test Flange Test CERW only Hardness Test Reverse Flattering Test 100% Hydrostate Test
ASTM A - 358 For Welded big Diameter Pipes	For all size	+0.5%	0.5%	No Limit	-0.3 mm	Customer's Specification		

ASTM	American Society for Testing of Materials
SAE	Society of Automotive Engineers
JIS	Japan Industrial Standards
GOST	Gosudarstvenii Standart
PED	Pressure Equipment Directive

ASME	American Society for Mechanical Engineers
DIN	Deutsches institut fur Nurmung
UNS	Unified Numbering System
TEMA	Tubular Exchanger Manufacturers Association
IBR	Indian Boiler Regulation

STAINLESS STEEL SEAMLESS TUBULAR PRODUCTS

Rajdeep Metals Distributors Seamless Pipes / Tubes division consist of a number of Cold Pilgering mills, Draw benches, Heat treatment furnaces and all necessary testing equipments to produce high quality tubes & pipes confirming to various International Standards.

The Pipes / Tubes are supplied according to appropriate standards as well as customer specifications in a large variety of Stainless Steel grades and dimensions. Specific requirements n execution, tolerance, lengths, mechanical and corrosion properties are offered on request.

PRODUCT RANGE :

Products	Size Range	Thickness	Specification	Grades
Tubes	6.35 mm to 101.6 mm OD	0.50 mm to 5.0 mm	ASTM A 213. A 269 A 270 'U" Tubes as per Customers drawing	TP 304, 304L, 304H, 316, 316L 316H, 321, 316Ti, 310S, 317, 317L, 347, 347H
Pipes	½ " NB to 24" NB	upto Sch XXS	ASTM A 312	

SALIENT FEATURES :

- Pipe upto 24" NPS. Sch. XXS without addition of filler wire as per ASTM A-312 Specification
- Condenser Tubes and Low Pressure Feed Water Heater tubes with On-line Bright Annealing and Eddy Current Testing Facilities
- Duplex Tubes and Tubes for General Engineering and process Industries
- Automobile Exhaust Tubes
- Competence to produce tubes with precision tolerance s
- Capability to produce Heat Exchanger Tubes upto a developed lenght of 30 meters
- Bright Annealed Tubes with inside roughness of 0.5 Microns for hygiene applications
- All testing facilities in-house to meet International Standards

STAINLESS STEEL WELDED TUBULAR PRODUCTS

Rajdeep Metals Distributors WELDED (Round, Square & Rectangular) Pipes / Tubes division consist of a number of Tube mills with square & Rectangular track , Cold finishing section, Heat treatment furnaces, Annealing & Pickling facilities, U-bending facility and testing facilities to manufacture high quality products confirming to International standards.

The Tubes / Pipes are supplied according to appropriate standards as well as customer specifications in a large variety of Steel grades, dimensions, tolerances, lengths, mechanical and corrosion properties are offered on request.

PRODUCT RANGE :

Products	Size Range	Thickness	Specification	Grades
Tubes	6.35 mm to 101.6 mm OD	0.50 mm to 5.0 mm	ASTM A 249, A 268, A 269. A 270. A 554, A 688, A 1016 'U" Tubes as per Customers drawing	TP 304, 304L, 304H, 316, 316L 316H, 321, 316Ti, 310S, 317, 317L, 347, 347H
Pipes	½ " NB to 60" NB	0.5 mm upto Sch XXS	ASTM A 312, A 554, ASTM A 358, A 928 Class 1,2,3,4,5 -100 % RT	

CARBON & ALLOY STEEL SEAMLESS TUBULAR PRODUCTS

PRODUCT RANGE :

Products	Size Range	Thickness	Specification
Tubes	6.35 mm to 101.6 mm OD	0.50 mm to 5.0 mm	ASTM A 179. A213, A334.
Pipes	½ " NB to 24" NB ½ " NB to 64" NB welded	Upto Sch XXS	ASTM A A106 Gr. B. A53 Gr B, A335

We can also supply API 5L X42 / X52 / X60 / X65 / X70

MILD STEEL PIPES CONFIRMING TO IS : 1239 (PART 1) - 1979

Nominal Bore		Outside Diameter		Light		Medium		Heavy	
				Thickness	Weight	Thickness	Weight	Thickness	Weight
Inch	In mm	In	mm	mm	kg/mtr	mm	Kg/Mtr.	mm	Kg/Mtr.
1/8"	3 mm	0.406	10.32	1.80	0.361	2.00	0.407	2.65	0.493
1/4"	6 mm	0.532	13.49	1.80	0.517	2.35	0.650	2.90	0.769
3/8"	10 mm	0.872	17.10	1.80	0.674	2.35	0.852	2.90	1.02
1/2"	15 mm	0.844	21.43	2.00	0.952	2.65	1.122	3.25	1.45
3/4"	20 mm	1.094	27.20	2.35	1.410	2.65	1.580	3.25	1.90
1"	25 mm	1.312	33.80	2.65	2.010	3.25	2.440	4.05	2.97
1.1/4"	32 mm	1.656	42.90	2.65	2.580	3.25	3.140	4.05	3.84
1.1/2"	40 mm	1.906	48.40	2.90	3.250	3.25	3.610	4.05	4.43
2"	50 mm	2.375	60.30	2.90	4.110	3.65	5.100	4.47	6.17
2.1/2"	65 mm	3.004	76.20	3.25	5.840	3.65	6.610	4.47	7.90
3"	80 mm	3.500	88.90	3.25	6.810	4.05	8.470	4.85	10.1
4"	100 mm	4.500	114.30	3.65	9.890	4.50	12.10	5.40	14.4
5"	125 mm	5.500	139.70	-	-	4.85	16.20	5.40	17.8
6"	150 mm	6.500	165.10	-	-	4.85	19.20	5.40	21.2

BIG DIAMETER ERW PIPES CONFIRMING TO IS 3589

Wall Thickness in mm	Nominal Bore 7" NB 193.7 mm OD	Nominal Bore 8" NB 219.1 mm OD	Nominal Bore 10" NB 273 mm OD	Nominal Bore 12" NB 323.7 mm OD	Nominal Bore 14" NB 355.6 mm OD	Nominal Bore 16" NB 406.4 mm OD	Nominal Bore 18" NB 457 mm OD	Nominal Bore 20" NB 508 mm OD
kg/mtr	kg/mtr	kg/mtr	kg/mtr	kg/mtr	kg/mtr	kg/mtr	kg/mtr	kg/mtr
4.85	22.59	25.62	32.07	38.13	-	-	-	-
5.20	24.17	27.43	34.34	40.85	-	-	-	-
5.60	26.00	29.28	36.93	43.93	48.11	-	-	-
6.00	27.88	31.53	39.50	47.02	51.49	61.00	69.00	-
6.35	29.34	33.28	41.73	49.67	54.43	62.35	70.50	78.50
7.01	32.27	36.76	46.43	55.45	61.82	69.04	-	-
7.94	-	41.00	50.95	61.85	67.98	77.92	87.80	-
8.18	-	42.56	53.42	65.12	-	-	-	-
9.53	-	51.50	60.24	73.75	81.21	93.13	105.00	117.00
12.70	-	-	-	-	107.28	123.30	139.00	155.00

Tolerance on Thickness and Weight : as per IS 1239

The following manufacturing tolerance shall be permitted on the tubes and sockets.

(a) Thickness	
(1) Butt welded Light tubes	+ Not limited - 8 percent
Medium and Heavy tubes	+ Not Limited - 10 percent
(2) Seamless tubes	+ Not Limited - 12.5 percent
(b) Weight :	
(1) Single tube (light series)	+ 10 percent - 8 percent
(2) Single tube (medium and heavy series)	+ 10 percent

MAXIMUM PERMISSIBLE PRESSURE AND TEMPERATURE FOR TUBES WITH STEEL COUPLINGS OR SCREWED AND SOCKETED JOINTS

Nominal Bore mm	Maximum Permissible Presure N/mm²	Kg./cm²	Maximum Permissible Temperature °C
Upto and Including 25 mm	1.20	12.24	260
Over 25 mm upto and Including 40 mm	1.03	10.50	260
Over 40 mm upto and Including 80 mm	0.86	8.77	260
over 80 mm upto and Including 100 mm	0.69	7.04	260
	0.83	8.47	177
Over 100 mm upto and Including 125 mm	0.69	7.04	171
Over 125 mm upto and Inlcuding 150 mm	0.50	5.10	160

For tubes fitted with appropriate fittings of suitably butt welded together, the Max. permissible pressure shall be 21.00 Kg/cm and Max. permissible temp. 260°C

NICKEL ALLOYS :

Nickel	UNS	AMS equivalent	Applications
Waspaloy	UNS N07001	AMS 5544 Sheet, Strip and Plate AMS 5586 Welded Tube AMS 5828 Welding Wire AMS 5704 Bar and Forgings	Gas Turbine Engine Components, Missile Systems, Shafts, Spacers, Seals, Rings, Casings, Fasteners , Engine Hardware, Airframe Assemblies.
Inconel 625	UNS N06625	AMS 5599 Sheet, Strip and Plate AMS 5666 Bar, Forgings AMS 5869 Sheet, Strip and Plate AMS 5879 Sheet, Strip and Foil AMS 5837 Welding Wire	Heat Shields, Furnace Hardware, Gas Turbine Engine Ducting, Combustion Liners Spray Bars, Chemical Plant Hardware, Special Seawater Applications.
Hastelloy C276	UNS N10276	AMS 5750	Flue Gas Desulfurization, Scrubbers, Dampers And Ducts.
Hastelloy X	UNS N06002	AMS 5536 Sheet, Strip and Plate AMS 5754 Bar and Forgings AMS 5798 Welding Wire AMS 5587 Seamless Tube AMS 5588 Welded Tube	Gas turbine engines Industrial furnaces Chemical processing Petrochemical industry
Inconel 718	UNS N07718	AMS 5662/63/64 Bar and Forgings AMS 5589 Seamless Tube AMS 5596/97 Sheet, Strip and Plate AMS 5832 Welding Wire	Jet Engine Gas Turbine Operations Heat exchangers / Carburising equipment Heating elements Sheathing .
Incoloy 800	UNS N08800	AMS 5766 Bar and Forgings AMS 5871 Sheet, Strip and Plate	Chemical Industry / Aerospace / Nuclear Engineering / Gas Turbine Components Heat Treating Industry /Pulp And Paper Industry Food Processing.
Inconel 600	UNS N06600	AMS 5580 (Tube *) AMS 5540 Sheet, Strip and Plate AMS 5665 Bar and Forgings AMS 5687 Wire	Nuclear reactors Gas turbines Rocket engines Pressure vessels Aircraft structures
Inconel X750	UNS N07750/52	AMS 5542 Sheet, Strip and Plate AMS 5582/83 Seamless Tube AMS 5747 Bar and Forgings AMS 5779 Welding Electrodes	
Alloy 80A **Nimonic 80A**	UNS N07080	AMS 5598 Sheet, Strip and Plate AMS 5666, 690, 275, 30.	Gas turbine engineering / Automobile exhaust valves Die-casting inserts and cores / Nuclear boiler tube parts.
Monel 400	UNS N04400	AMS 4574/75 Tube AMS 4675 Bar and Forgings AMS 4731 Wire and Ribbon AMS 4544 Sheet, Strip and Plate	Marine Engineering / Chemical And Hydrocarbon Processing Equipment / Crude Petroleum Stills / Boiler Feed Water Heaters, Valves, Pumps, Shafts, Fittings, And Fasteners Industrial Heat Exchangers Chemical Process Industry / Oil and Gas Industry
Monel K500	UNS N05500	AMS 4676 Bar and Forgings	Feed water and steam generator tubing. Pickling bat heating coils.
Monel 405	UNS N04405	AMS 4674 Bar and Forgings AMS 7234	Aerospace Gas Turbine Parts / Combustion Cans, Transistor Ducts, Flameholders, Honeycomb.

NICKEL BASE ALLOYS

Nominal Chemical composition % (not for specification purpose)

	Ni	C	Mn	Fe	S	Si	Cu	Cr	Co	Mo	Al	Ti	Others
Nickel 200	99.5+	0.08	0.18	0.2	0.005	0.18	0.13	-	-	-	-	-	-
Nickel 201	99.5+	0.01	0.18	0.2	0.005	0.18	0.13	-	-	-	-	-	-
Nickel 205	99.5+	0.08	0.18	0.10	0.004	0.08	0.08	-	-	-	--	0.03	
Nickel 212	97.7	0.10	2.0	0.05	0.005	0.05	0.03	-	-	-	-	-	-
Nickel 222	99.5+	0.01	0.02	0.04	0.0025	0.01	0.01	0.01	0.06	-	0.01	0.01	
Nickel 270	99.98	0.01	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	
Monel alloy 400	63.0 min	0.15	1.0	25max	0.024max	0.5 max	31.0	-	-	-	-	-	
Monel alloy k-500	63.0 min	0.15	1.5max	2.0max	0.010max	0.05	30.0	-	-	-	2.9	0.6	
Cast Monel alloy pig (grade O)	63.0 min	0.07	0.75	2.5max	0.02	0.04max	30.0	0.10max	-	0.20max	0.05max	0.01max	
Cast Monel alloy pig (oxidised)	63.0 min	0.03 max	0.20max	2.5max	0.02max	0.04max	30.0	0.10max	-	0.20max	0.05max	0.01max	
Inconel alloy 600	72.0min	0.15 max	1.0 max	8.0	0.015max	0.06 max	0.05max	15.5	-	-	-	-	Na+Ta 3.65
Inconel alloy 625	60.5+	0.10 max	0.25	5.0max	0.015max	0.5 max	-	21.5	-	9.0	0.25	0.25	
Inconel alloy 800	32.5+	0.10 max	1.5 max	Bal.	0.015max	1.0max	0.75max	21.0	-	-	0.38	0.38	
Incoloy 825	42.0+	0.05 max	1.0 max	Bal.	0.03max	0.5max	2.25	21.5	-	3.0	0.20max	0.9max	
Inconel alloy 800	32.5	0.025	0.25	Bal.	0.015	0.25	0.25	-	14.5	-	0.1	1.6	
Incoloy 825	37.0	0.1max	1.2	Bal.	-	2.3	0.5max	18.0	-	-	-	0.20	

PHYSICAL AND MECHANICAL PROPERTIES

	Density Kg/dm3	Melting Range °C	Specific heat at 20 C J/KgC	Thermal Conductivity at 20 C W/mC	Thermal Expansion 10-6 °C 20-95 °C	Electrical resistivity at 20 C microohm cm	Tensile strength N/mn²	Hardness HV
Nickel 200	8.89	1435-1445	456	74.9	13.3	9.5	380-550	90-120
Nickel 201	8.89	1435-1445	456	79.2	13.3	7.6	340-410	75-100
Nickel 205	8.89	1435-1445	456	74.9	13.3	9.5	340	77
Nickel 212	8.86	1435-1445	430	44.1	-	10.9	476	144
Nickel 222	8.89	1435-1445	456	74.9	13.3	8.8	340	77
Nickel 270	8.89	1455	460	85.7	13.3	7.5	340	80
Monel alloy 400	8.83	1300-1350	419	21.7	14.1	51.0	480-620	111-151
Monel alloy k-500	8.46	1315-1350	419	17.4	13.7	61.4	620-760	141-189
Inconel alloy 600	8.42	1370-1425	461	14.8	13.3	103	550-690	121-173
Inconel alloy 625	8.44	1290-1350	410	9.8	12.8	129	830-1040	146-247
Inconel alloy 800	7.95	1355-1385	502	11.7	14.2	99	520-700	121-188
Inconel alloy 825	8.14	1370-4000	441	10.9	14.0	113	580-730	121-183
Inconel alloy 904	8.12	-	442	14.9	4.6	72	923	-
Incoloy alloy DS	7.92	1330-1400	452	12.0	14.1	108	680	208

CORROSION – RESISTANT ALLOYS – NICKEL BASIS

NICKEL 200 / 2001

Commercially pure nickel with good mechanical properties and excellent resistance to many corrosive media. Important characteristics are its magnetic and magneto restrictive properties, the high thermal and electricity at low gas content.

MONEL 400 (ALLOY 400)

Alloy 400 is especially resist ant to saline and other acids in ventilated condition. It is successfully employed in the salt winning process. Alloy 400 is especially suited for employment in sea breakage water at high speed. Where refinance against cavitation and erosion is of great importance. This alloy is Very resistant to solvents, glass – etching agents, sulfuric and other acids and virtually to all alkalis, this grade is not sensitive to stress corrosion cracking in oxidizing media. Alloy 400 can be temperatures up to 550^0 Celsius

MONEL K – 500 (ALLOY K – 500)

Anage - hardening alloy with the same corrosion resistance as Alloy 400, though with increased tensile strength and hardness, Alloy K -500 retains its strength up temperature of about 650^0 Celsius

INCONEL 600 (ALLOY 600)

Alloy 600 has excellent resistance to oxidation at temperatures 1175^0 Celsius and also resistant to variety of corrosion media. It retains its high strength up to about 650^0 Celsius. Even at Lowest temperatures, alloy 600 has good mechanical properties One to its resistance to chloride stress corrosion cracking, alloy 600 is employed in components of power plants. This grade can be welded without thermal re-treatment .

INCONEL 625 (ALLOY 625)

Excellent corrosion resistance with high strength and ductility at temperature up to 700^0 Celsius. Applicable up to 1100^0 Celsius Alloy 625 is welded without thermal re-treatment .

INCO ALLOY 800 (H) (ALLOY 810 0(H))

This Alloy is resistant to corrosion resulting for hydrogen and hydrogen sulfide as to stress corrosion cracking. It is highly heat resistant and insensitive to the separation of sigma phase. Alloy 800 H with controlled carbon content improves further more the creep strength depending on time aneled condition.

INCO ALLOY 825 (ALLOY 825)

Resistance to sulfuric acid, phosphoric acid solvents and sea water as well as too many oxidizing chemicals, Alloy 825 has good resistance to reducing acid. It can be employed without thermal treatment after the welding process.

HASTALLOY C - 276 (ALLOY C- 276)

Today probably one of the best and manifold alloys on the market hence employed in extremely corrosive reducing and oxidizing application. Alloy C- 276 has excellent resistance to strong oxidizing media contaminated by chloride, dry chloride acid, formate acid, acetic acid, acetic hydride solution, Sea water solutions and saline solutions. The alloy is resistant to the corrosive in fluence of wet hydrochloride acid hydrochloride chlorine dioxide solutions.

ALLOY 20

Alloy 20 is one of the so called 'Super stainless steels that was designed for maximum resistance to acid attack. It 's nicked, chromium, molybdenum and copper content contribute to it's over all resistance to chloride on stress corrosion cracking and general pitting attack. The alloy is stabilized with columbium to minimize carbide precipitation during welding. It has good mechanical properties and can be fabricated with comparstive ease.

FASTENERS

We hold expertise in offering fasteners, such as nuts, bolts, washers, anchor fasteners, stud bolts, Threaded Rod to our clients. These are manufactured utilizing high grade, such as Stainless Steel, Carbon steel, Duplex steel, Monel, Inconel, Hastelloy, Titanium and Nickel alloy, which Alloy steel assure their high tensile strength and corrosion resistance. Our range finds applications in numerous industries and is offered in sizes ranging from M4 To M100, length up to 5 meters as per the client's requirement.

SALIENT FEATURES :

- Severe vibration under impulse pressure
- Dimensional preciseness
- Long service life
- Static Pressure
- Corrosion Resistance
- Study Construction
- High Tolerance
- Perfect Installation & application
- Fast Performance

Inconel Alloys : Inconel Alloy 600, Inconel Alloy 601, Inconel Alloy 625, Inconel Alloy 718, Inconel Alloy 725, Inconel Alloy X750

Monel Alloys : Monel 400, Monel R405, Monel K500.

Incoloy Alloys : Incoloy Alloy 20, Incoloy Alloy 800, Incoloy Alloy 800H/800HT, Incoloy Alloy 825, Incoloy Alloy 925, Incoloy Alloy A286

Hastelloy Alloy : Hastelloy C4, Hastelloy B2, Hastelloy G30, Hastelloy B3, Hastelloy C276, Hastelloy X, Hastelloy C22

Duplex & Super Duplex : UNS S31803, UNS S32750, UNS S32760, UNS S32550.

Stainless Steels : 347, 310, 303, 304/304H, 316/316L, 317/317L, 17/4PH, 410, 431, Nitronic 50, Nitronic 60, Nimonic 80A

TYPE

- ANCHOR FASTENERS
- HEX HEAD BOLTS
- SOCKET CAPS SCREW
- HEX NUTS
- EYE BOLTS
- STUD BOLTS
- THREADED RODS
- COUNTERSUNK BOLTS
- FLAT / SPRING / LOCK WASHERS
- FOUNDATION BOLTS

SOCKET WELD / FORGED FITTINGS

We offer to our clients specially designed forged pipe fittings. We also undertake new projects as per the drawings and specifications of the client for forged fittings. The product is delivered in a short time frame. We offer special forged pipes fittings in different metals which find application in various industries. We can offer forged fittings in following materials of construction :-

- Nickel Alloy & Copper Nickel Alloy
- Stainless Steel & Duplex Steel

Stainless Steel & Duplex Steel Forged Fittings

Standard : ANSI B16.11, MSS SP - 97, BS 3799
Size : ½"NB to 4" NB, (Socketweld & Threaded)
Class : 3000#, 6000#, 9000#
Stainless Steel : ASTM A TP 304/304L/304H/316/316L/ 316H / 316Ti / 3 310 /317L/321/347/904L
Duplex Steel : ASTM A 815- UNS S31803, S32750, S32760, S32205

Alloy Steel, Carbon Steel & LTCS Forged Fittings

Size : ½"NB to 4" NB, (Socketweld & Threaded)
Class : 3000#, 6000#, 9000#
Alloy Steel : ASTM A 182-F5, F9, F11, F12, F22 & F91
Carbon Steel : ASTM A 106 Gr. A/B/C
Low temp. CS : A 350 Lf2

TYPE

- ELBOW
- TEE
- UNION
- CROSS
- BUSHING
- PLUG
- SWAGE NIPPLE
- WELDING BOSS
- HEXAGON NIPPLE
- BARREL NIPPLE
- WELDING NIPPLE
- PARRALER NIPPLE
- STREET ELBOW
- HEXAGON NUT
- HOSE NIPPLE
- BEND
- ADAPTER
- INSERT
- WELDOLET
- ELBOWLET
- SOCKOLET
- THREDOLET
- NIPOLET
- LETROLET

SHEETS / PLATES / COILS

We have been offering to our clients a vast range 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 requirments of various industries and are known for their attributes, such as high tensile strength, corrosion resistance & long life usage.

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

Nickel Alloy

ASTM / ASME SB 162 UNS 2200 (NICKEL 200)
ASTM / ASME SB 162 UNS 2201 (NICKEL 201)
ASTM / ASME SB 127 UNS 4400 (MONEL 400)
ASTM / ASME SB 463 UNS 8020 (ALLOY20 / 20 CB 3)
ASTM / ASME SB 424 UNS 8825 (INCONEL 825)
ASTM / ASME SB 168 UNS 6600 (INCONEL 600)
ASTM / ASME SB 409 UNS 8810/8811 (INCONEL 800/800HT)
ASTM / ASME SB 443 UNS 6625 (INCONEL 625)
ASTM / ASME SB 575 UNS 10276 (HASTELLOY C276)

Carbon Steel / Boiler Quality Plates : as per IS 2062/ASTM A36, Gr. A, B & C, IS 2002 Gr. 1 & 2 ASTM A 516 Gr. 60 & 70

Alloy Steel Plates : as per ASTM A387 Gr. 2, 5, 9, 11, 12 & 22 in class 1 & 2 ASTM A 204 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

SUMMARY OF THE MAIN ASTM STANDARDS GENERALLY USED FOR SHEETS / PLATES

		Chemical requirements percent (%)										Mechanical requirements					
ASTM	Grade	C Max	Mn Max	P Max	S Max	Si Max	Ni	Cr.	Mo	Cu	Others	Tensile Strength mini-MPa		Yeild Strength mini-MPa		Elong mini %	Hardness Brinell	Rockwell
A240	304	0.08	0.08	0.045	0.030	0.75	8.00-10.5	18.00-20.0				515		205		40	201	92
	304L	0.03	2.00	0.045	0.030	0.75	8.00-12.0	18.00-20.0				485		170		40	201	92
	310	0.08	2.00	0.045	0.030	1.50	19.0-22.0	24.0-26.0				515		205		40	217	95
	316	0.08	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.00-3.00			515		205		40	217	95
	316L	0.03	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.00-3.00			485		170		40	217	95
	317L	0.03	2.00	0.045	0.030	0.75	11.0-15.0	18.0-20.0	3.00-4.00			515		205		40	217	95
	321	0.08	2.00	0.045	0.030	0.75	9.00-12.0	17.0-19.0			Ti>5xC<0.70	515		205		40	217	95
	347	0.08	2.00	0.045	0.030	0.75	9.00-13.0	17.0-19.0			Cb+Ta>10xc<1.10	515		205		40	201	92
A 387 Class1 Class2	2	005.21	0.55-0.80	0.035	0.040	0.15-0.40		0.50-0.80	0.45-0.60			Class1	Class2	Class1	Class2			
	5	0.15	0.30-0.60	0.04	0.030	0.050		4.00-6.00	0.45-0.65			380	486	230	310	22	max201HB	max92HB
	7	0.15	0.30-0.60	0.030	0.030	1.00		6.00-8.00	0.45-0.65			415	515	205	310	18	max202HB	max92HB
	9	0.15	0.30-0.60	0.030	0.030	1.00		8.00-10.0	0.90-1.10			415	515	205	310	18	max217HB	max95HB
	11	0.04-0.17	0.40-0.65	0.04	0.04	0.50-0.80		1.00-1.50	0.45-0.65			415	515	205	310	18	max217HB	max95HB
	12	0.04-0.17	0.035	0.04	0.04	0.15-0.40		0.80-1.50	0.45-0.60			415	515	240	310	22	max217HB	max95HB
	21	0.04-0.17	0.035	0.035	0.035	0.50		2.75-3.25	0.90-1.10			380	450	230	275	22	max217HB	max95HB
	22	0.05-0.17	0.035	0.035	0.035	0.50		2.00-2.50	0.90-1.10			415	515	205	310	18	max201HB	max92HB
												415	515	310	310	18	max201HB	max92HB
A515	55	0.22	0.90	0.035	0.04	0.15-0.40						380-515		205		27		
	60	0.27	0.90	0.035	0.04	0.15-0.40						415-550		220		25		
	65	0.31	0.90	0.035	0.04	0.15-0.40						450-585		240		23		
	70	0.33	1.20	0.035	0.04	0.15-0.40						485-620		260		21		
A516	55	0.20	0.60-1.20	0.035	0.04	0.15-0.40						380-515		205		27		
	60	0.23	0.85-1.20	0.035	0.04	0.15-0.40						415-550		202		25		
	65	0.26	0.85-1.20	0.035	0.04	0.15-0.40						450-585		240		23		
	70	0.28	0.85-1.20	0.035	0.04	0.15-0.40						485-620		260		21		
A537	Class1	0.24	0.70-1.35	0.035	0.04	0.15-0.40	0.25 max	0.80 max	0.35 max			485-620		345		22		
	Class2	0.24	0.70-1.35	0.035	0.04	0.15-0.40	0.25 max	0.80 max	0.35 max			550-690		415		22		

DUPLEX / SUPER DUPLEX TUBULAR PRODUCTS

DUPLEX

Duplex is a stainless steel made from a mixture of Austenite and Ferrite phases. Like most austenitic stainless steels, Duplex has a strong resistance to corrosion similar to those of a type 304 and 316. Unlike similar steels, Duplex also displays an improved resistance to localised corrosion, particularly pitting, crevice corrosion and stress corrosion crackling because of Duplex has a lower nickel and molybdenum content than other austenitic stainless steels.

Due to its special qualities, in some cases the strength of Duplex steel can be upto double that of the most commonly used grades of stainless steel. Duplex becomes brittle at extreme temperatures so its uses is normally restricted to a max. temperature of 300 deg. Duplex also shows signs of embrittlement at -50 degrees.

Uses

Pipes for production and transportation of Oil & Gas
Structural and Mechanical components
Heat Exchangers /Cooling Pipes
Cargo vessels & containers
High strength wiring / High strength wiring

SUPER DUPLEX

Super Duplex is a stainless steel mainly used in Oil & Gas applications. Due to a very high tensile strength, Super Duplex has better resisitance to erosion, corrosion crackling and corrosion fatigue than conventional austenitic stainless steels.

Its high concentration of chromium and molybdenum content also gives Super Duplex a high resistance to acids that causess pitting and crevice corrosion. Because Super Duplex is an austenitic ferritic iron chromium-nickel alloy with molebdenum addition, it is also used for industrial processes where high strength and corrosion resistance are essential.

Structural and mechanicl components, Heat exchangers, utility and industrial systems, cargo vessels and high strength wiring solutions are ideal uses for it.

Product Range :

Products	Size Range	Thickness	Specification	Grades
Duplex Tubes / Pipes	½"to 10: NB	Upto Sch XXS	ASTM A 789, A 790	UNS S31803, UNS S32205 SAF 2205
Super Duplex Tubes / Pipes	½ " NB to 10" NB	Upto Sch XXS	ASTM A 789, A 790	UNS S32750, UNS S32760,

COPPER PRODUCTS

BRASS TUBES

Copper	DHP Copper, ETP Copper, DPA Copper OFHC Copper
BRASS	63 / 37 Brass, 70 / 30 Brass, Admirality Brass, Aluminium Brass & other Compositions of Brass.
CUPRONICKEL	95 / 5 alloy, 90 / 10 alloy & 70 / 30 alloy.
BRONZES	Phosphorous Bronze Aluminium Bronze & Gun Metal, Phosphorous Bronze A B1 / A B2 Bush Round.

COPPER TUBES

TUBES	2mm OD to 200mm OD with Wall thickness of 0.10 mm to 15 mm in length upto 10 mtrs straight (in coils upto 25 mtrs) in copper, Brass & Curpronickel.
RODS	In all size upto 160mm diameter in Copper, Brass and Bronzes.
STRIPS / PROFILES	Copper Strips and sections as per clients specific requirements.
WIRES	Copper wires upto 42 swg in bright annealed condition.
S. E. WIRES	Super enamelled copper wires upto 42 swg.

BRASS RODS

COPPER TUBE & SECTIONS

SPECIFICTIONS

Indian Standard Specification (ISS)
British Standard Specification (BSS)
American Standard for Testing of Material (ASTM)
As per Parties Specific Specifiaction.

Melt No.	Chemical Compositions Wt. %										
	C	Si	Mn	P	S	Cr	Ni	V	W	Ti	Cu
I/1	3.01	1.07	0.6	0.03	0.05	12.9	0.07	0.005	0.031	0.005	0.039
I/2	2.35	0.65	1.06	0.05	0.07	2.5.6	1.09	0.009	0.065	0. 010	0.962
I/3	1.78	0.70	0.33	0.05	0.06	18.3	0.07	0.005	0.055	0.004	0.047
I/4	3.14	0.96	0.54	0.05	0.06	24.6	0.42	0.047	0.047	0.014	0.079
I/5	3.24	0.71	1.36	0.05	0.06	26.6	0.64	0.032	0.025	0.009	0.047
I/6	4.50	1.06	1.04	0.04	0.06	25.2	1.02	0.007	0.025	0.009	1.20
I/7	3.35	1.51	0.63	0.03	0.05	21.2	0.61	0.036	0.062	0.013	0.193
I/8	3.60	0.93	0.27	0.02	0.01	16.1	0.01	-	-	5.04	0.005

NO	D	B	L	L1	R
0101	5	19.1	10.55	4	9.65
0102	7	12.5	16.25	10	8.25
0103	7	16.48	17.5	9.26	8.24
0104	7	17.2	17.6	9	8.6
0105	7	20	17	7	10
0106	7	20.7	16.4	8	10.4
0107	7	21	16.5	6	10.5
0108	7	23.9	21	9	12
0109	7	25	16.5	6	12.5
0110	7	25.4	16.7	4	12.7
0111	7	30.5	20.3	5	15.3
0112	7	31	23.5	8	15.5
0113	7	31.8	23.9	8	15.9
0114	7	34.1	22.6	5.5	17.1
0115	7	39.5	28.8	9	19.8
0116	7	49.1	31.6	7	24.6
0117	7	50	32	7	25
0118	7.94	20.4	17.2	7	10.2
0119	7.94	23.25	16.93	4	11.63

TWO CONNECTOR: U-TUBE

NO	D	B	L	L1	R
0120	7.94	25.4	19.7	4	12.7
0121	7.94	38.1	20.05	1	19.05
0122	9.52	22.9	19.5	8	11.5
0123	9.52	25	20.5	8	12.5
0124	9.52	25	20.7	8	12.7
0125	9.52	31.75	23.88	8	15.88
0126	9.52	42.6	32.3	11	21.3
0127	9.52	43.3	31.7	10	21.7
0128	12	35	26	8.5	17.5
0129	12	49.5	32	7.25	24.75
0130	12	60	50	20	30
0131	12	70	43	8	35
0132	12.7	31.8	23.9	8	15.9
0133	12.7	32	23	7	16
0134	12.7	38.1	32.8	13.5	19.1
0135	15.88	23.8	21.9	10	11.9
0136	15.88	38.1	26.1	7	19.1
0137	16	42.5	29.5	8.25	21.25
0138	16	60	37	7	30

FORGED STEEL GATE VALVES

CAST STAINLESS STEEL GATE VALVE ASA 300 / 600 CLASS OUTSIDE SCREW & YOKE TYPE BOLTED BONNET

ITEM NO. 28

BODY / BONNET	ASTM A 351 Gr CF 8 / CF 8M / CF3 / CF3M
TRIMS	18 Cr 8 NI / 18 Cr 10 Ni - 2 MO / CF3M OR AISI 316L
MFG STD	API 600
INSP & TEST STD	API 598
ENDS	FLANGED TO ANSI B 16.5 RF (300# / 600#)
HYD-TEST PRESSURE	BODY : 1100 Psig (77 Kg/Cm²) / 2175 Psig (153 Kg/Cm²) - 600#
	SEAT : 800 Psig (56 Kg/Cm²) / 1630 Psig (115 Kg/Cm²) - 600#
SIZE RANGE	**25 MM TO 750 MM**

~~CAST IRON GATE VALVE ASA 125 CLASS~~ OUTSIDE SCREW & YOKE TYPE BOLTED BONNET

ITEM NO. 29

BODY / BONNET	IS 210 Gr FG 200/220
TRIMS	13 Cr / 18 Cr 8 Ni
MFG STD	GENERALLY CONFORMING TO API 600 / BS 5150
INSP & TEST STD	GENERALLY CONFORMING TO API 598 / BS 6755
ENDS	FLANGED TO ANSI B 16.1 FF (125#)
HYD-TEST PRESSURE	BODY : 225 Psig (16 Kg/Cm²)
	SEAT : 165 Psig (11.5 Kg/Cm²)
SIZE RANGE	**25 MM TO 800 MM**

STAINLESS STEEL BAR STOCK GATE VALVE 150 / 300 CLASS INSIDE SCREW TYPE, SCREWED BONNET

ITEM NO. 30

BODY / BONNET	AISI 304
TRIMS	AISI 304
MFG STD	GENERALLY CONFORMING TO BS 5352
INSP & TEST STD	BS 6755
ENDS	SCREWED TO BSP / BSPT / NPT
	SOCKETWELD ENDS TO ANSI B 16.11
	FLANGED TO BS 10 TABLE "F" / "H"
	FLANGED TO ANSI B 16.5 RF (150#/ 300#)
HYD-TEST PRESSURE	BODY : 425 Psig (30 Kg/Cm²) FOR 150#
	SEAT : 300 Psig (21 Kg/Cm²) FOR 150#
	BODY : 1100 Psig (77 Kg/Cm²) FOR 300#
	SEAT : 800 Psig (56 Kg/Cm²) FOR 300#
SIZE RANGE	**15 MM TO 100 MM**

STAINLESS STEEL BAR STOCK GATE VALVE 150 CLASS INSIDE SCREW TYPE, SCREWED BONNET

ITEM NO. 30 A

BODY / BONNET	AISI 316
TRIMS	AISI 316
MFG STD	GENERALLY CONFORMING TO BS 5352
INSP & TEST STD	BS 6755
ENDS	SCREWED TO BSP / BSPT / NPT
	SOCKETWELD ENDS TO ANSI B 16.11
	FLANGED TO ANSI B 16.5 RF (150#)
HYD-TEST PRESSURE	BODY : 425 Psig (30 Kg/Cm²) FOR 150#
	SEAT : 300 Psig (21 Kg/Cm²) FOR 150#
SIZE RANGE	**15 MM TO 100 MM**

FORGED CARBON STEEL GATE VALVE ASA 800 CLASS OUTSIDE SCREW & YOKE TYPE BOLTED BONNET

ITEM NO. 33

BODY/BONNET	ASTM A 105
TRIMS	13 Cr
MFG STD	API 602 / BS 5352
INSP & TEST STD	API 598 / BS 6755
ENDS	SCREWED TO BSP / BSPT / NPT
	SOCKETWELD TO ANSI B 16.11
HYD-TEST PRESSURE	BODY : 3000 Psig (211 Kg/Cm²)
	SEAT : 2000 Psig (140 Kg/Cm²)
SIZE RANGE	**15 MM TO 50 MM**

FORGED CARBON STEEL GATE VALVE ASA 1500 / 2500 CLASS OUTSIDE SCREW & YOKE TYPE BOLTED BONNET

ITEM NO. 16

BODY / BONNET	ASTM A 105
TRIMS	13 Cr
MFG STD	API 602 / BS 5352
INSP & TEST STD	API 598 / BS 6755
ENDS	SCREWED TO BSPT / NPT
	SOCKETWELD TO ANSI B 16.11
HYD-TEST PRESSURE	BODY : 5400 Psig (379 Kg/Cm²) FOR 1500#
	SEAT : 4000 Psig (281 Kg/Cm²) FOR 1500#
	BODY : 9000 Psig (633 Kg/Cm²) FOR 2500#
	SEAT : 6600 Psig (464 Kg/Cm²) FOR 2500#
SIZE RANGE	**15 MM TO 40 MM**

FORGED CARBON STEEL GATE VALVE ASA 150 / 300 CLASS OUTSIDE SCREW & YOKE TYPE BOLTED BONNET

ITEM NO. 17

BODY / BONNET	ASTM A 105
TRIMS	13 Cr
MFG STD	API 602 / BS 5352
INSP & TEST STD	API 598 / BS 6755
ENDS	FLANGED TO ANSI B 16.5 RF (150#/300#)
HYD-TEST PRESSURE	BODY : 425 Psig (30 Kg/Cm²) FOR 150#
	SEAT : 300 Psig (21 Kg/Cm²) FOR 150#
	BODY : 1100 Psig (77 Kg/Cm²) FOR 300#
	SEAT : 800 Psig (56 Kg/Cm²) FOR 300#
SIZE RANGE	**15 MM TO 50 MM**

DAIRY FITTING PRODUCTS

SMS SANITARY VALVE

TECHNICAL INFORMATION
FORMULAE OF CALCULATING WEIGHT

1] Weight of Stainless Steel Pipe
O.D. (mm) - W. Thick (mm) X W. Thick (mm) X 0.0248= Wt. Per Mtr
O.D. (mm) - W. Thick (mm) X W. Thick (mm) X 0.00756= Wt. Per Feet

2] Weight of Stainless Steel Round Bar
Dia (mm) X Dia (mm) X 0.00623 = Wt. per Mtr.
Dia (mm) X Dia (mm) X 0.0019 = Wt. per Feet

3] Weight of Stainless Steel Square Bar
Dia (mm) X Dia (mm) X 0.00788 = Wt. per Mtr.
Dia (mm) X Dia (mm) X 0.0024 = Wt. per Feet

4] Weight of Stainless Steel Hexagonal Bar
Dia (mm) X Dia (mm) X 0.00680 = Wt. per Mtr.
Dia (mm) X Dia (mm) X 0.002072 = Wt. per Feet

5] Weight of Stainless Steel Flat Bar
Width (mm) X Thickness (mm) X 0.00798 = Weight per Mtr.
Width (mm) X Thickness (mm) X 0.00243 = Weight per Feet

6] Weight of Stainless Steel Sheets & Plates
Lenght (Mtrs) X Width (Mtrs) X Thick (mm) X 8 = Weight per PC
Lenght (Feet) X Width (Feet) X Thick (mm) X 3/4 = Weight per PC

7] Weight of Stainless Steel Circle
Dia (mm) X Dia (mm) X Thck (mm) / 160 =Gms. per PC
Dia (mm) X Dia (mm) X Thck (mm) X 0.0000063 = Kg. per PC

8] Weight of Brass Pipes / Copper Pipes
O.D. (mm) - W. Thick (mm) X W. Thick (mm) X 0.0260 = Wt. Per Mtr.

9] Weight Lead Pipe
O.D (mm) - W. Thick (mm) X W. Thick (mm) X 0.0345 = Wt. Per Mtr

10] Weight of Aluminium Pipe
O.D. (mm) - W. Thick (mm) X W. Thick (mm) X 0.0083 = Wt. per Mtr.

11] Weight of Aluminium Sheet
Length (Mtrs) X Width(Mtrs) X Thick (mm) X 2.69 = Weight per PC

12] Weight Conversion of Mtr. to Ft.
Length (Mtrs) X Width (Mtrs) X Thick (mm) X 2.69 = Weight per PC

13] Wt. of 1 Mtr / 3.2808 = Wt per Ft.
Barlow's Formula for calculating bursting pressure
P = 2ST/D or t-DP/2S or S-DP/2T or D=2ST/P
P = Bursting Pe\ressure P Si.,
S= Tensile Strength of tubes, T = Wall Thickness (in inches)
D = Outside Diameter (in inches)

14] Formula for Healthy Business
Honesty + Quality of Goods + Quick Service = Good Healthy Business

MATERIAL SPECIFICATION FOR PIPES & TUBES OF STAINLESS STEEL, ALLOY STEEL, CARBON STEEL & MILD STEEL.

PIPE SPECIFICATION	CHEMICAL PROPERTIES								MECHANICAL PROPERTIES				OTHERS
	C%	Mn%	P% (Max)	S% (Max)	Si%	Cr%	Ni%	Mo%	U.T.S. (Min) Mpa	Y.S. (Min) Mpa	ELONG. (Min) L	ELONG. (Min) T	
ASTMA 312 Gr. TP 304	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	8.0-11.0	-	515	205	35	25	-
ASTMA 312 Gr. TP 304L	0.035 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	8.0-13.0	-	485	170	35	25	-
ASTMA 312 Gr. TP 304H	0.04-0.10	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	8.0-11.0	-	515	205	35	25	-
ASTMA 312 Gr. TP 304LN	0.035 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	8.0-12.0	-	515	205	35	25	N%=0.10-0.16
ASTMA 312 Gr. TP 309S	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	22.0-24.0	12.0-15.0	0.75 Max	515	205	35	25	-
ASTMA 312 Gr. TP 310S	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	24.0-26.0	19.0-22.0	0.75 Max	515	205	35	25	-
ASTMA 312 Gr. TP 316	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	11.0-14.0	2.00-3.00	515	205	35	25	-
ASTMA 312 Gr. TP 316L	0.035 Max	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	10.0-14.0	2.00-3.00	485	170	35	25	-
ASTMA 312 Gr. TP 316H	0.04-0.10	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	11.0-14.0	2.00-3.00	515	205	35	25	-
ASTMA 312 Gr. TP 316LN	0.035 Max	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	11.0-14.0	2.00-3.00	515	205	35	25	N%=0.10-0.16
ASTMA 312 Gr. TP 317	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	11.0-14.0	3.00-4.00	515	205	35	25	-
ASTMA 312 Gr. TP 317L	0.035 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	11.0-15.0	3.00-4.00	515	205	35	25	-
ASTMA 312 Gr. TP 321	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	9.0-12.0	-	515	205	35	25	Ti%= (5xC)-0.70
ASTMA 312 Gr. TP 321H	0.04-0.10	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	9.0-12.0	-	515	205	35	25	Ti%=(4xC)-0.60
ASTMA 312 Gr. TP 347	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	9.0-13.0	-	515	205	35	25	Cb%=(10xC)-1.00
ASTMA 312 Gr. TP 347H	0.04-0.10	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	9.0-13.0	-	515	205	35	25	Cb%= (8xC)-1.10
ASTMA 358 Gr. TP 304	0.080 Max	2.00 Max	0.045	0.030	0.75 Max	18.0-20.0	8.0-10.0	-	515	205	40		N%=0.10 Max,HRB=92 Max
ASTMA 358 Gr. TP 304L	0.035 Max	2.00 Max	0.045	0.030	0.75 Max	18.0-20.0	8.0-12.0	-	485	170	40		N%=0.10 Max,HRB=92 Max
ASTMA 358 Gr. TP 309S	0.080 Max	2.00 Max	0.045	0.030	0.75 Max	22.0-24.0	12.0-15.0	-	515	205	40		HRB=95 Max
ASTMA 358 Gr. TP 310S	0.080 Max	2.00 Max	0.045	0.030	1.50 Max	24.0-26.0	19.0-22.0	-	515	205	40		HRB=95 Max
ASTMA 358 Gr. TP 316	0.080 Max	2.00 Max	0.045	0.030	0.75 Max	16.0-18.0	10.0-14.0	2.00-3.00	515	205	40		N%+0.10 Max, HRB=95 Max
ASTMA 358 Gr. TP 316L	0.035 Max	2.00 Max	0.045	0.030	0.75 Max	16.0-18.0	10.0-14.0	2.00-3.00	485	170	40		N%=0.10 Max, HRB=95 Max
ASTMA 358 Gr. TP 321	0.080 Max	2.00 Max	0.045	0.030	0.75 Max	17.0-19.0	9.0-12.0	-	515	205	40		N%=0.10 Max, Ti%=5x(C+N)-0.70, HRB=95 Max
ASTMA 358 Gr. TP 347	0.080 Max	2.00 Max	0.045	0.030	0.75 Max	17.0-19.0	9.0-13.0	-	515	205	40		Cb=(10xC)-1.00, HRB=92 Max
ASTMA 106 Gr. A	0.25 Max	2.00 Max	0.035	0.030	0.10 Min	0.40 Max	0.40 Max	0.15 Max	330	205	30	25	Cu%;0.40 Max, Va%; 0.80
ASTM A 106 Gr. B	0.30 Max	0.29-1.06	0.035	0.035	0.10 Min	0.40 Max	0.40 Max	0.15 Max	415	240	30	16.5	Cu%; 0.40 Max, Va% 0.80
ASTM A 106 Gr. C	0.35 Max	0.29-1.06	0.035	0.035	0.10 Min	0.40 Max	0.40 Max	0.15 Max	485	275	30	16.5	Cu%; 0.40 Max , Va% 0.80
ASTM A 53 Gr. A	0.25 Max	0.95 Max	0.050	0.035	-	0.40 Max	0.40 Max	0.15 Max	330	205	30	16.5	Cu%; 0.40 Max, Va% 0.80
ASTM A 53 Gr. B	0.30 Max	1.20 Max	0.050	0.045	-	0.40 Max	0.40 Max	0.15 Max	415	240	30	16.5	Cu%; 0.40 Max Va%0.80
ASTM A 333 Gr. 1	0.30 Max	0.40-1.06	0.025	0.045	-	-	-	-	380	205	35	25	Impact Test= -45°C, J=18, Min, HRB=85 Max
ASTM A 333 Gr. 6	0.30 Max	0.29-1.06	0.025	0.025	0.10 Min	-	-	-	415	240	30	16.5	Impact Test= -45°C, J=18, Min, HRB=85 Max
ASTM A 335 Gr. P1	0.10-0.20	0.30-0.80	0.025	0.025	0.10-0.50	-	-	0.44-0.65	380	205	30	20	
ASTM A 335 Gr. P2	0.10-0.20	0.30-0.61	0.025	0.025	0.10-0.30	0.50-0.81	-	0.44-0.65	380	205	30	20	
ASTM A 335 Gr. P5	0.15 Max	0.30-0.60	0.025	0.025	0.50 Max	4.00-6.00	-	0.44-0.65	415	205	30	20	
ASTM A 335 Gr. P9	0.15 Max	0.30-0.60	0.025	0.025	0.25-1.00	8.00-10.00	-	0.90-1.10	415	205	30	20	
ASTM A 335 Gr. P11	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	205	30	20	
ASTM A 335 Gr. P12	0.05-0.15	0.30-0.61	0.025	0.025	0.50 Max	0.80-1.25	-	0.44-0.65	415	220	30	20	
ASTM A 335 Gr. P22	0.05-0.15	0.30-0.60	0.025	0.025	0.50 Max	1.90-2.60	-	0.87-1.13	415	205	30	20	
ASTMA 335 Gr. P91	0.08-0.12	0.30-0.60	0.020	0.010	0.20-0.50	8.00-9.50	0.40 Max	0.85-1.05	620	440	20	-	V%=0.18-0.25, N%=0.030-0.070, Al%=0.02 Max, Cb%=0.06-0.10
ASTM A 213 Gr. T2	0.10-0.20	0.30-0.61	0.025	0.025	0.10-0.30	0.50-0.81	-	0.44-0.65	415	205	30		HRB=85 Max
ASTM A 213 Gr. T5	0.15 Max	0.30-0.60	0.025	0.025	0.50 Max	4.00-6.00	-	0.45-0.65	415	205	30		HRB=85 Max
ASTM A 213 Gr. T11	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	205	30		HRB=85 Max
ASTM A 213 Gr. T12	0.05-0.15	0.30-0.61	0.025	0.025	0.50 Max	0.80-1.25	-	0.44-0.65	415	220	30		HRB=85 Max
ASTM A 213 Gr. T22	0.05-0.15	0.30-0.60	0.025	0.025	0.50 Max	1.90-2.60	-	0.87-1.13	415	205	30		HRB=85 Max
ASTM A 179	0.06-6.18	0.27-0.63	0.035	0.035	-	-	-	-	325	180	35		HRB=72 Max
ASTM A 210 Gr. A1	0.27 Max	0.93 Max	0.035	0.035	0.10 Min	-	-	-	415	255	30		HRB=79 Max

MILD STEEL PIPES CONFIRMING TO IS : 1239 (PART 1) - 1979

Norminal Bore		Outside Diameter		Light Thick Weight		Medium Thick Weight		Heavy Thick Weight	
Inch	in mm	Inch	in mm	mm	Kg./mtr.	mm	Kg./mtr.	mm	Kg./mtr.
1/8"	3mm	0.406	10.32	1.80	0.361	2.00	0.407	2.65	0.493
1/4"	6mm	0.532	13.49	1.80	0.517	2.35	0.650	2.90	0.769
3/8"	10mm	0.673	17.10	1.80	0.674	2.35	0.852	2.90	1.02
1/2"	15mm	0.844	21.43	2.00	0.952	2.65	1.220	3.25	1.45
3/4"	20mm	1.094	27.20	2.35	1.410	2.65	1.580	3.25	1.90
1"	25mm	1.312	33.80	2.65	2.010	3.25	2.440	4.05	2.97
1.1/4"	32mm	1.656	42.90	2.65	2.580	3.25	3.140	4.05	3.84
1.1/2"	40mm	1.906	48.40	2.90	3.250	3.25	3.610	4.05	4.43
2"	50mm	2.375	60.30	2.90	4.110	3.65	5.100	4.47	6.17
2.1/2'	65mm	3.004	76.20	3.25	5.840	3.65	6.610	4.47	7.90
3"	80mm	3.500	88.90	3.25	6.810	4.05	8.470	4.85	10.1
4"	100mm	4.500	114.30	3.65	9.890	4.50	12.10	5.40	14.4
5"	125mm	5.500	139.70	-	-	4.85	16.20	5.40	17.8
6"	150mm	6.500	165.10	-	-	4.85	19.20	5.40	21.2

STAINLESS STEEL SCHEDULE PIPES N.B.,W.T. & WEIGHT PER FT & (MTR.)

Norminal Bore			Sch 5		Sch 10		Sch 40		Sch 80		Sch 160	
MM	inch	MM O/D	WT	(kg./m)	WT	(kg./m)	WT	(kg./m)	WT	(kg./m)	WT	(kg./m kg./ft)
3	1/8"	10.3	1.24	(0.276)	1.24	(0.278)	1.73	(0.365)	2.41	(0.469)	-	-
6	1/4"	13.7	1.24	(0.380)	1.65	(0.492)	2.24	(0.633)	3.02	(0.797)	-	-
10	3/8"	17.7	1.4	(0.166)	1.65	(0.544)	2.31	(0.630)	3.20	(0.846)	-	(0.1.10)
15	1/2"	21.3	1.65	(0.801)	2.11	(1.00)	2.77	(1.27)	3.73	(1.67)	4.75	(1.94)
20	3/4"	26.7	1.65	(1.02)	2.11	(1.27)	2.78	(1.68)	3.91	(2.20)	4.54	(2.89)
25	1"	33.4	1.65	(1.29)	2.77	(2.09)	3.38	(2.50)	4.55	(3.27)	6.35	(4.24)
32	11/4"	42.2	1.65	(1.65)	2.77	(2.69)	3.56	(3.38)	4.85	(4.46)	6.35	(5.61)
40	11/2"	48.3	1.65	(1.899)	2.77	(3.11)	3.68	(4.05)	5.08	(5.41)	7.14	(7.25)
50	2"	60.3	1.65	(2.39)	2.77	(3.937)	3.91	(5.44)	5.54	(7.48)	8.71	(11.09)
65	21/2"	73.0	2.11	(3.707)	3.05	(5.249)	5.16	(6.63)	7.01	(11.4)	9.53	(14.9)
80	3"	88.9	2.11	(4.528)	3.05	(6.463)	5.16	(11.3)	7.62	(15.3)	11.13	(21.3)
100	4"	114.3	2.11	(5.938)	3.05	(8.366)	6.02	(16.1)	8.56	(22.3)	13.29	-
125	5"	141.3	2.77	(9.55)	3.40	(11.61)	6.55	(21.8)	9.53	(31.0)	15.9	(49.2)
150	6"	168.3	2.77	(11.37)	3.40	(14.04)	7.11	(28.25)	10.97	(42.5)	18.24	(67.6)
200	8"	219.1	2.77	(14.80)	3.76	(20.01)	8.18	(42.7)	12.7	(64.6)	23.01	(111.2)
250	10"	273.0	3.40	(22.74)	4.19	(28.2)	9.27	(61.20)	15.06	(96.1)	28.5	(173.3)
300	12"	323.89	3.96	(31.43)	4.57	(36.53)	10.30	(79.71)	17.45	(132.1)	33.32	(240.1)

Conversion Table SWG To Inches

SWG No.	Thickness		SWG No. In	Thickness	
	In.	mm		In.	mm
7/0	0.500	12.700	17	0.056	1.422
6/0	0.464	11.785	18	0.048	1.219
5/0	0.432	10.973	19	0.040	1.016
4/0	0.400	10.160	20	0.036	0.914
3/0	0.372	9.449	21	0.032	0.813
2/0	0.348	8.839	22	0.028	0.711
0	0.324	8.229	23	0.024	0.610
1	0.300	7.620	24	0.022	0.559
2	0.276	7.010	25	0.020	0.508
3	0.252	6.400	26	0.018	0.457
4	0.235	5.894	27	0.0164	0.417
5	0.212	5.385	28	0.0148	0.376
6	0.192	4.877	29	0.0136	0.345
7	0.176	4.470	30	0.0124	0.315
8	0.160	4.064	31	0.0116	0.295
9	0.144	3.658	32	0.0108	0.275
10	0.128	3.251	33	0.0100	0.254
11	0.116	2.946	34	0.0092	0.234
12	0.104	2.642	35	0.0084	0.213
13	0.092	2.337	36	0.0076	0.193
14	0.080	2.032	38	0.0068	0.152
15	0.072	1.829	39	0.0052	0.132
16	0.064	1.626			

ANGLES CHANNELS BEAMS

M.S ANGLES		M.S. BEAMS		M.S. CHANNELS	
Size in mm.	weight in kgs. per feet	Size in mm.	weight in kgs. per feet	Size in mm.	weight in kgs. per feet
25x25x3	0.335	100x50	2.432	75x40	2.172
25x25x5	0.548	125x70	4.023	100x50	2.925
40x40x3	0.548	150x75	4.571	125x65	3.992
40x40x5	0.915	175x85	5.943	150x75	5.120
50x50x5	1.158	200x100	7.893	175x75	5.973
60x60x6	1.645	250x125	11.612	200x75	6.796
65x65x6	1.767	300x140	14.782	250x80	9.326
75x75x6	2.072	350x140	16.125	300x90	11.063
75x75x8	2.712	400x140	19.080	400x100	15.270
75x75x10	3.352	450x150	22.280		
100x100x6	2.804	500x180	26.730		
50x50x6	1.372	600x210	37.370		

COMPARISION OF STANLESS STEEL TO VARIOUS STANDARDS APPROXIMATELY

USA		Germany		Greet Britain	Russia	Greet Britain
AISI	SAE	Standard No.	Designation	En Steel Replaced	GOST	SIS-14
202	-	1.4371	XBCrMnNi189	-	12Kh17G9AN4	-
301	30301	1.4310	X12CrNi17	-	-	-
304	30304	1.4301	X5CrNis189	58E	08Kh18N10	2332/2333
304L	30304L	1.4306	X2CrNi189	-	-	2352
309	30309	1.4828	X15crNiSi2012	-	20Kh20Ni14S2	-
310	303010	1.4841	X15CrNiSi2520	-	20Kh25N20S2	-
316	30316	1.4401	Z5CrNiMo1810	58J	-	2347/2343
316Ti	-	1.4571	X6CrNiMoTi122	-	10Ch17N13M2T	-
316L	30316L	1.4404	X2CrNiMo1810	-	-	2353
317	30317	1.4449	X5CrNiMo1713	-	-	-
317L	-	1.4435	X2CrNiMo1812	-	03Ch17N14M2	2367
321	30321	1.4541	X10CrNiTi189	-	1Kh18N10T	2337
347	30347	1.4550	X10CrNiNb189	58F&58G	08Kh18N12B	2338
410	51410	1.4006	X10Cr13	56A	12Kh13	2302
420	51420	1.402	X20Cr13	56C	20Kh13	2302
430	51430	1.4016	X6Cr17	60	12Kh17	2320
431	51431	1.4057	X12CrNi17	57	20Kh17N2	2321

CHEMICAL & COMPOSITION OF STAINLESS STEEL

Grade Designation AISI	C Max	Mn Max	P Max	S Max	Si Max	CR	NI	MO	Other Element
201	0.15	5.50/7.50	0.060	0.030	1.00	16.00/18.00	3.50/5.50	-	0.25N Max
202	0.15	7.50-10.00	0.060	0.030	1.00	17.00/19.00	4.00/6.00	-	025 N
301	0.15	2.00	0.045	0.040	1.00	16.00/18.00	6.00/8.00	-	-
304	0.08	2.00	0.045	0.030	1.00	18.00/20.00	8.00/10.50	-	-
304L	0.30	2.00	0.045	0.030	1.00	18.00/20.00	8.00/12.00	-	-
309	0.20	2.00	0.045	0.030	1.00	22.00/24.00	12.00/15.00	-	-
310	0.25	2.00	0.045	0.030	1.50	24.00/26.00	19.00/22.00	-	-
316	0.08	2.00	0.045	0.030	1.00	16.00/18.00	10.00/14.00	2.00/3.00	-
316L	0.030	2.00	0.045	0.030	1.00	16.00/18.00	10.00/14.00	2.00/3.00	-
317	0.080	2.00	0.045	0.030	1.00	18.00/20.00	11.00/15.00	3.00/4.00	-
317L	0.030	2.00	0.045	0.030	1.00	18.00/20.00	11.00/15.00	3.00/4.00	-
316TI	0.080	2.00	0.045	0.030	1.00	16.00/18.00	10.00/14.00	2.00/3.00	Ti5xCmin
321	0.08	2.00	0.045	0.030	1.00	17.00/19.00	9.00/12.00	-	5xCTi(min
347	0.08	2.00	0.045	0.030	1.00	17.00/19.00	9.00/12.00	-	(10xc NB)
430	0.12	1.00	0.040	0.030	1.00	16.00/18.00	0.75	-	-
410	0.15	1.00	0.040	0.030	1.00	11.50/13.50	-	-	-
410S	0.08	1.00	0.040	0.030	1.00	11.50/13.50	0.60 max	-	-
420	0.15(min)	1.00	0.040	0.030	1.00	12.00/14.00	-	-	-
431	0.20	1.00	0.040	0.030	1.00	15.00/17.00	1.25-2.50	-	-

CHEMICAL COMPOSITION OF STAINLESS STEEL

Stainless Steel is essentially a low carbon steel which contains chromium at 10% or more by weight. It is this addition of chromium that gives the steel its unique stainless corrosion resisting Properties. The corrosion resistance and other useful properties of the steel are enhanced by increased chromium content and the addition of other elements such as molybdenum, nickel and nitrogen

Chemical Composition of Stainless Steel											Nearest Equivalent Specification		
UNS NO.	EN	BS	AISI Grade	C Max	Mn Max	P Max	S Max	Si Max	Cr	Ni	Mo	Cu	I.S.
Austentic													
S20100	-	-	201	0.15	5.5/7.5	0.06	0.03	1	16.0/18.0	3.5/5.5	-	-	-
S20200	-	-	202	0.15	7.5/10	0.06	0.03	1	17.0/19.0	4.0/6.0	-	-	-
S30100	-	301S21	301	0.15	2.0max	0.045	0.040	1.0	16.0/18.0	6.0/8.0	-	-	10Cr17Ni7
S30200	-	-	302	0.15	2.0	0.045	0.030	1.0	17.0/190	8.0/10.0	-	-	07Cr18Ni9
S30300	-	303S31	303	0.15	2.0	0.045	0.15 min	1.0	17.0/19.0	8.0/10.0	-	-	15Cr18Ni9
S30400	1.4301	-	304	0.08	2.0	0.045	0.030	1.0	18.0/20.0	8.0/10.0	-	-	04Cr18Ni10
S30403	1.4307	304S11	304L	0.030	2.0	0.045	0.030	1.0	18.0/20.0	8.0/12.0	-	-	02Cr18Ni11
S30453	1.4306	304S61	304LN	0.030	2.0	0.045	0.030	0.75	18.0/20.0	8.0/11.0	-	-	-
S30409	-	-	304H	0.05	2.0	0.045	0.03	1	18.0/20.0	8.5/9.5	-	-	-
S30900	-	309S16	309	0.20	2.0max	0.045	0.030	1.0	22.0/24.0	12.0/15.0	-	-	20Cr24Ni12
S30908	1.4833	-	309S	0.08	2.0	0.045	0.030	1.0	22.0/24.0	12.0/15.0	-	-	-
S31009	-	-	310H	0.25	2.0	0.045	0.030	1.50	24.0/26.0	19.0/22.0	-	-	10Cr25Ni12
S31008	1.4845	-	310S	0.08	2.0	0.045	0.030	1.50	24.0/26.0	19.0/22.0	-	-	-
S31600	-	316S31	316	0.08	2.0	0.045	0.030	1.0	16.0/18.0	10.0/14.0	2.0/3.0	-	04Cr17Ni12Mo2
S31603	1.4404	316S11	316L	0.030	2.0	0.045	0.030	1.0	16.0/18.0	10.0/14.0	2.0/3.0	-	03Cr17Ni12Mo2
S31653	-	316S61	316LN	0.030	2.0	0.045	0.030	0.75	16.0/18.0	10.0/14.0	2.0/3.0	-	-
S31635	1.4571	320S31	316Ti	0.080	2.0	0.045	0.030	1.0	16.0/18.0	10.0/14.0	2.0/3.0		-
S31700	-	-	317	0.08	2.0	0.045	0.030	1.0	18.0/20.0	11.0/15.0	3.0/4.0	-	-
S31703	-	317S12	317L	0.030	2.0	0.045	0.030	1.0	18.0/20.0	11.0/15.0	3.0/4.0	-	-
S31753	-	-	317LN	0.03	2.0	0.045	0.03	1	18.0/20.0	11.0/15.0	3.0/4.0	-	-
S32100	1.4541	321S31	321	0.08	2.0	0.045	0.030	1.0	17.0/19.0	9.0/12.0	-	-	04Cr18Ni10Ti20
S34700	-	347S31	347	0.08	2.0	0.045	0.030	1.0	17.0/19.0	9.0/12.0	-	-	04Cr18Ni10Nb-40
N08904	1.4539	-	904L	0.02	2.0	0.045	0.035	1	19.0/23.0	23.0/28.0	4.0-5.0	-	-
Ferritic													
S41000	-	410S21	410	0.15	1.00	0.040	0.030	1.0	11.50-13.50	0.75	...	...	...
S41008	1.4000	403S17	410S	0.08	1.00	0.040	0.030	1.0	11.50-13.50	0.60	...	...	...
S42900	-	-	429[3]	0.12	1.00	0.040	0.030	1.0	14.00-16.00	...	...	...	...
S43000	1.4016	430S17	430	0.12	1.00	0.040	0.030	1.0	16.00-18.00	0.75	...	...	...
S43035	-	-	439	0.07	1.00	0.040	0.030	1.0	17.00-19.00	0.050	...	0.04	...
S44400	-	-	444	0.025	1.00	0.040	0.030	1.0	17.5-19.5	1.00	1.75-2.50	0.035	...
	-	-	409L	≤ 0.030	≤1.00	≤1.00	-	-	-	10.50~11.75	~	-	-
Duplex & Super Duplex													
S31803	1.4462	-	---	0.030	2.00	0.030	0.020	1.0	21.0-23.0	4.5-6.5	2.5-3.5	—	0.08-0.20
S32550	-	-	255[3]	0.040	1.50	0.040	0.030	1.0	24.0-27.0	4.5-6.5	2.9-3.9	1.50-2.50	0.10-0.25
S32750	1.441	-	2507	0.030	1.20	0.035	0.020	0.8	24.0-26.0	6.0-8.0	3.0-5.0	0.50	0.24-0.32
S32760	-	-	---	0.030	1.00	0.030	0.010	1.0	24.0-26.0	6.0-8.0	3.0-4.0	0.50-1.00	0.20-0.30

STAINLESS STEEL PIPE, SCHEDULE, DIMENSION, WALL THICKNESS, WEIGHT / METER

DESIGNATION		O/D	NOMINAL WALL THICKNESS														
OF DIAMETER		DIA	SCH 5S		SCH 5		SCH 10S		SCH 10		SCH 20S		SCH 30		SCH 40S		SCH 40
(A)	(B)	METER MM	WALL THK	WEIGHT KG / MTR	WALL THK	WEIGHT KG / MTR	WALL THK	WEIGHT KG / MTR	WALL THK	WEIGHT KG / MTR	WALL THK	WEIGHT KG / MTR	WALL THK	WEIGHT KG / MTR	WALL THK	WEIGHT KG / MTR	WALL THK
6	1/8	10.3	1.0	0.23			1.2	0.27			1.5	33			1.73	0.37	
8	1/4	13.72	1.2	0.37			1.65	0.49			2.00	58			2.24	0.64	
10	3/8	17.2	1.2	0.47			1.65	0.63			2.00	74			2.31	0.87	
15	1/2	21.3	1.65	0.81	1.65	0.81	2.11	1.02	2.11	1.02	2.5	1.15			2.77	1.29	
20	3/4	26.7	1.65	1.03	1.65	1.03	2.11	1.30	2.11	1.30	2.5	1.49			2.87	1.71	
25	1	33.4	1.65	1.31	1.65	1.31	2.77	2.12	2.77	2.12	3.00	2.24			3.38	2.54	
32	1.1/4	42.2	1.65	1.67	1.65	1.67	2.77	2.73	2.77	2.73	3.00	2.90			3.56	3.44	
40	1.1/2	48.3	1.65	1.93	1.65	1.93	2.77	3.15	2.77	3.15	3.00	3.35			3.68	4.11	
50	2	60.3	1.65	2.42	1.65	2.42	2.77	3.99	2.77	3.99	3.5	4.90			3.91	5.52	
65	2.1/2	73.0	2.11	3.75	2.11	3.75	3.05	5.34	3.05	5.34	3.5	6.00			5.16	8.77	
80	3	88.9	2.11	4.59	2.11	4.59	3.05	6.56	3.05	6.56	4.00	8.37			5.49	11.50	
90	3.1/2	101.6	2.11	5.25	2.11	5.25	3.05	7.53	3.05	7.53	4.00	9.62			5.74	13.78	
100	4	114.3	2.11	5.93	2.11	5.93	3.05	8.50	3.05	8.50	4.5	12.18			6.02	16.32	
125	5	141.3	2.77	9.61	2.77	6.61	3.40	11.74	3.40	11.74	5.00	16.80			6.55	22.10	
150	6	168.3	2.77	11.47	2.77	11.47	3.40	14.04	3.40	14.04	5.5	22.08			7.11	28.69	
200	8	219.1	2.77	15.00	2.77	15.00	3.76	20.27	3.76	20.27	6.35	33.82	7.04	37.38	8.18	43.20	
250	10	273.1	3.40	22.95	3.40	22.95	4.19	28.20	4.19	28.20	6.35	42.41	7.80	51.81	9.27	61.22	
300	12	323.9	3.96	31.72	4.19	33.60	4.57	36.54	4.57	36.54	6.35	50.48	8.38	66.20	9.53	75.01	10.31
350	14	355.6	3.96	34.86			4.78	41.99	6.35	55.53	7.92	68.95	9.53	82.58	9.53	82.58	11.13
400	16	406.4	4.19	42.20			4.78	48.07	6.35	63.61	7.92	79.03	9.53	94.70	9.53	94.70	12.70
450	18	457.2	4.19	47.46			4.78	54.15	6.35	71.69	7.92	89.10	11.13	124.32	9.53	106.83	14.27
500	20	508.0	4.78	60.23			5.54	69.70	6.35	79.76	9.53	118.93	12.70	157.51	9.53	118.93	15.06
550	22	558.8	4.78	65.95			5.54	76.75	6.35	87.84	9.53	131.07	12.70	173.66	9.53	131.07	15.88
600	24	609.6	5.54	83.80			6.35	95.92	6.35	95.92	9.53	143.20	14.27	212.72	9.53	143.20	17.45
650	26	660.4							7.92	129.40	12.70	205.97			9.53	155.32	
700	28	711.2							7.92	139.47	12.70	222.13	15.88	276.48	9.53	167.44	
750	30	762.0	6.35	120.15			7.92	149.55	7.92	149.55	12.70	238.28	15.88	296.68	9.53	179.56	
800	32	812.8							7.92	159.62	12.70	254.44	15.88	316.88	9.53	191.69	17.48
850	34	863.6							7.92	169.64	12.70	270.50	15.88	336.96	9.53	203.74	17.48
900	36	914.4							7.92	179.77	12.70	286.75	15.88	357.28	9.53	215.93	19.05

STAINLESS STEEL PIPE, SCHEDULE, DIMENSION, WALL THICKNESS, WEIGHT / METER

NOMINAL WALL THICKNESS

	SCH 60		SCH 80S		SCH 80		SCH 100		SCH 120		SCH 140		SCH 160		SCH XXS	
WEIGHT KG / MTR	WALL THK	WEIGHT KG / MTR	WALL THK	WEIGHT KG / MTR	WALL THK	WEIGHT KG / MTR	WALL THK	WEIGHT KG / MTR	WALL THK	WEIGHT KG / MTR	WALL THK	WEIGHT KG / MTR	WALL THK	WEIGHT KG / MTR	WALL THK	WEIGHT KG / MTR
			2.41	0.47												
			3.02	0.82												
			3.20	1.12												
			3.73	1.64									4.78	1.98	7.47	2.59
			3.91	2.23									5.56	2.94	7.82	3.69
			4.55	3.29									6.35	4.30	9.09	5.53
			4.85	4.53									6.35	5.59	9.70	7.88
			5.08	5.49									7.14	7.35	10.16	9.69
			5.54	7.60									8.74	11.29	11.07	13.65
			7.01	11.60									9.53	15.15	14.02	20.72
			7.62	15.51									11.13	21.67	15.24	28.11
			8.08	18.92											16.15	34.56
			8.56	22.66					11.13	28.75			13.49	34.05	17.12	41.66
			9.53	31.44					12.70	40.90			15.88	49.37	19.05	58.31
			10.97	43.21					14.27	55.03			18.26	68.59	21.95	79.2
	10.81	53.90	12.70	65.63			15.06	76.93	18.24	91.73	20.62	102.47	23.01	112.97	22.23	108.00
	12.20	82.80	12.70	82.80	15.06	97.27	18.24	116.38	21.41	134.90	25.40	155.50	28.58	174.95	25.40	155.5
80.94	14.27	110.62	12.70	98.95	17.45	133.88	21.41	162.14	25.40	189.82	28.58	211.31	33.32	242.40	25.40	189.82
96.00	15.06	128.42	12.70	109.04	19.05	160.54	23.80	197.74	27.76	227.88	31.75	257.47	35.71	286.04		
125.20	16.66	162.59	12.70	125.20	21.41	206.40	26.19	249.34	30.94	290.88	36.53	338.32	40.46	370.74		
158.27	19.05	209.00	12.70	141.35	23.80	258.29	29.36	314.54	34.93	369.34	39.67	414.74	45.24	466.67		
185.89	20.62	251.65	12.70	157.51	26.19	315.97	32.54	387.41	38.10	448.30	44.45	515.94	49.99	573.31		
216.04	22.23	298.55	12.70	173.66	28.57	379.70	34.92	457.83	41.27	535.17	47.62	609.30	53.97	682.57		
258.74	24.59	360.21	12.70	189.82	30.94	448.30	38.89	555.76	46.02	649.44	52.37	730.72	59.51	819.70		
			12.70	205.97												
			12.70	222.13												
			12.70	238.28												
348.11			12.70	254.44												
370.22			12.70	270.50												
427.09			12.70	286.75												

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