

| Stainless Steel

| Carbon Steel

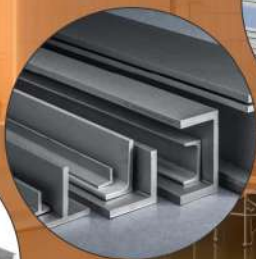
| Duplex Steel

| Copper Nickel

| Alloy Steel

| Nickel Alloys

| Mild Steel



Patel Metals & Tubes Pvt. Ltd.

(AN ISO 9001 : 2015 CERTIFIED COMPANY)

Head Off : 97/101, Pansare House, 3rd Floor, Office No. 21,
4th Kumbharwada, Near Gol Deval, Mumbai - 400 004

E-mail : patelmetal801@gmail.com | www.patelmetals.in

Company Profile



We are **Stockiest and Suppliers of Stainless Steel Seamless & Welded (ERW) Pipes, Square Pipe, Plate, Round Bar, Sheet, Coil, Flat, Fastener in 304, 304L, 310, 310S, 321, 347, 316, 316L, 316 Ti, 317L, 410, 420, 430 & other qualities.** Which are required by your Industries, in all aspects of Projects Implementation, Maintenance, Modernizations, Expansion and Shut down Application etc.

Patel Metals & Tubes Pvt. Ltd. is a company promoted by Highly experienced Technical personnel who are in field of stocking & supplying Industrial raw material for more than 35 years.

Patel Metals & Tubes Pvt. Ltd. participates in the timely supply of raw-material to clients. We provide remedies in the critical time of troubleshooting so that the wheels of the customers industry keep moving and do not come to grinding halt.

At **Patel Metals & Tubes Pvt. Ltd.** Quality of a product is always maintained, as quality is never an accident; it is outcome of High intention, sincere efforts, Intelligent direction & skillful execution; it represents the wise choice of many alternatives.

We will provide you material at Most Competitive Prices Right Time Right Quality with EXCELLENT SERVICE and most important Market Information and latest trend to facilitate you to take right Purchase decision.

Our company has responded to all & every need of industry as one of Top and the most reputed **Importers/Exporter & Stockiest of Stainless Steel Sheets, Plates, Coils, Strips, Pipes, Tubes, Pipe Fittings, Round Bar, Fasteners & Flange Fittings.**

Our Competitive Prices and full logical support will insure satisfaction to our customers .

Quality Policy

OUR EXCELLENCE...

Quality is our prime concern. We are able to maintain high quality standards through our committed personnel and sound infrastructure. We ensure that finest quality material is used for our products. For ensure the quality of each material, we are providing Materials Test Certificate along with supply. Our team of experts maintain a vigil on the quality of the products. Every single piece is attached with test certificates and reports. We are continually improving our quality to serve our clients better.



OUR FACILITIES...

We have a sound infrastructure. Our spacious warehouse has the capacity to store large quantities of products. We possess a team of experts who are sourcing products of international standard to keep abreast with the global markets. Our quality professionals have served as a beacon not only for us but also for the entire industry in establishing top-notch quality standards.



"Our Philosophy is long-term, since we believe that the key to lasting success is the formatting of long-term RELATIONSHIP with our clients."





Patel Metals & Tubes Pvt. Ltd.

(AN ISO 9001 : 2015 CERTIFIED COMPANY)

CERTIFICATES



Certificate of Registration

This is to certify that

PATELMETALS & TUBES PRIVATE LIMITED

FLOOR 3, 21, PLOT NO.99, PANSARE HOUSE, SHREE RAM MANDIR, DURGAVEVI UDYAN, 4TH KUMBHARWADA, GIRGAON MUMBAI, MUMBAI CITY, MAHARASHTRA 400004, INDIA

has been independently assessed by QVA and is compliance with the requirement of the standard

ISO 9001:2015

Quality Management System

For the following scope of activities

REPAIR AND MAINTENANCE OF METAL CUTTING AND METAL FORMING MACHINE TOOLS AND ACCESSORIES, POWER-DRIVEN HAND TOOLS AND OTHER MACHINE TOOLS, METAL CUTTING STRAIGHTNESS

Certificate Number: VAPLHV23-2523528

To verify this certificate please visit at www.gaafs.us

Date of Certification: 25TH JULY 2023
Issuance Date: 25TH JULY 2023
1st Surveillance Due: 24TH JULY 2024
2nd Surveillance Due: 24TH JULY 2025
Re-Certification Due: 24TH JULY 2026



Authorized Signatory



QVA Certification
CAB Address : Maryland Avenue, SW Washington, D.C. 20022
Validity of this certificate is subject to annual surveillance audits to be done successfully
This certificate is the property of QVA Certification and shall be returned immediately on
QVA Certification is an independent Systems Products and Personal
assessment body. QVA Certification is accredited by GAAFS.US

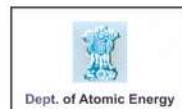
भारत सरकार Government of India सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय Ministry of Micro, Small and Medium Enterprises		MSME																															
UDYAM REGISTRATION CERTIFICATE																																	
Our small hands to make you LARGE																																	
TYPE OF ENTERPRISE	SMALL	MANUFACTURING																															
UDYAM REGISTRATION NUMBER	UDYAM-MH-19-0015252																																
NAME OF ENTERPRISE	M/S PATEL METALS & TUBES PRIVATE LIMITED																																
SOCIAL CATEGORY OF ENTREPRENEUR	General																																
NAME OF UNITS	<table border="1"> <thead> <tr> <th>S.No.</th> <th colspan="2">Units Name</th> </tr> </thead> <tbody> <tr> <td>1</td> <td colspan="2"></td> </tr> </tbody> </table>			S.No.	Units Name		1																										
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DATE OF INCORPORATION / REGISTRATION OF ENTERPRISE	13/03/2016																																
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DATE OF UDYAM REGISTRATION	16/10/2020																																

THIRD PARTY INSPECTION



EIL, HGS, P&D, GLC, TUBOSCOPE, VELOSI, MOODY, VETCO, IRS, BVIS, DNV, J & HG, BS, TCS, PDIL, TUV etc.

NABL & Government Approved Labs



We can also supply all the materials with NABL & Government Approved Labs Like:



- 1) GEO-Chem Lab
- 2) Metallurgical Service
- 3) Metallurgical Lab
- 4) TCR
- 5) Metal Analysis
- 6) Elca Lab



BRANDS WE DEAL IN :



E-mail : patelmetal801@gmail.com | www.patelmetals.in

WAREHOUSE



Patel Metals & Tubes Pvt. Ltd.

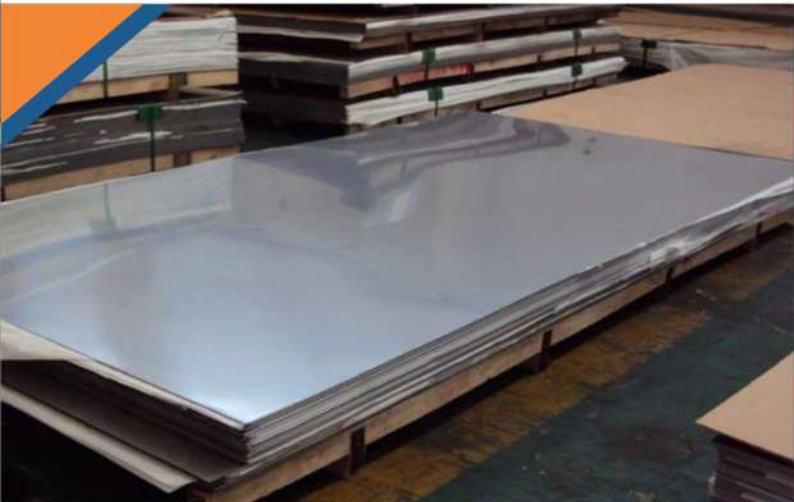
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Patel Metals & Tubes Pvt. Ltd.

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SHEETS, PLATES & COILS

Stainless Steel

Range mm : 0.5mm to 200 mm thick in 1000 mm To 2500 width & 2500 to 12000 mm Length available with NACE MR 01-7.5

Specification : ASTM A240

Grade : 202, 303, 304, 304L, 304H, 316, 316L, 316Ti, 316H, 309S, 309H, 310S, 310H, 317, 317L, 321, 321H, 347, 347H, 904L, 409, 409M, 410, 420, 430, 431, 446, 441, 444, SMO 254, 253MA

Carbon Steel

ASTM A36, A285 Gr.C, A516 Gr.70, IS 2062 Gr. A/B, A 516, G65/60

Alloy Steel

ASTM A387 Gr.11, Gr.12, Gr.22, Gr.91, Gr.92, Gr.5, Gr.9 (Ct. 1/2) 16Mo3, 15Mo3

Wear Resistant Plates

Hardox 400, Hardox 500, Abrex 400, Abrex 500, Sumihard 400, Sumihard 500

Duplex Steel

Specification : ASTM A240

Grade : U NS 531803, 532205 (2205), UN5 532750 (2507), UN5 532750 (Zeron 100)

Nickel Alloy

Nickel Grade : UNS N02200, UNS N02201

Inconel Grade : UNS N06600, UNS N06625, UNS N08800, UNS N08810, UNS N08811, UNS N08825

Monel Grade : UNS N04400

Hastelloy Grade : UNS N10276, UNS N06022, UNS N10665

Alloy 20 Grade : UNS N08020

Copper Nickel Grade : UNS C70600 (90:10), UNS C71500 (70:30)

Titanium

Specification : ASTM 3265

Grade : Gr.1 R 56250 (CP4 Gr 2 R 50400 (CP3), Gr.3 50550 (CP2), Gr.4 50700 (CPI), Gr.7 52400

Specification : ASTM B265

Grade : Gr.5 R 56400 (6A1-4V), Gr.23 R 56401 (6A1-4V-ELI), Gr.12 R 53400

TYPE

- SHEET
- STRIP
- COIL
- CUT-PIECE SHEET / PLATE
- PLATE

• EN 10204 3.1/3.2
Mill Test Certificate • NACE MR0175



Patel Metals & Tubes Pvt. Ltd.

(AN ISO 9001 : 2015 CERTIFIED COMPANY)



PIPES & TUBES

Stainless Steel

Size : 1/2"NB to 36"NB ANSI B 16.9 MSS-SP43

Schedule : Sch. 5 to Sch. XXS

Specification : ASTM A312, A249, A269, A358

Grade : 202, 303, 304, 304L, 304H, 316, 316L, 316Ti, 316H, 309S, 309H, 310S, 310H, 317, 317L, 321, 321H, 347, 347H, 904L, 409, 409M, 410, 420, 430, 431, 446, 441, 444, SMO 254, 253MA

Specification : ASTM A731, A268

Carbon Steel

Pipes

ASTM A106 Gr A, Gr B, Gr C, A53, Sa333 Gr B,

Tubes

ASTM A179, A210 Gr. A1, BS 3059 Gr.360 / 440
Low Temp. (LTCS)
A333 Gr.6

Line Pipes

API 5L Gr.B, X42, X46, X52, X56, X60, X65, X70, X80

Alloy Steel

Pipes

Specification : ASTM A335

Grade : P1, P5, P9, P11, P12, P22, P91, P92

Tubes

Specification : ASTM A213

Grade : T1, T5, T9, T11, T12, T22, T91, T92

Duplex Steel

Specification : ASTM A789, A790

Grade : UNS 531803, UNS 532205 (2205), UNS 532750 (2507), UNS 532760 (Zeron 100)

Nickel Alloy

Nickel

Grade : UNS N02200, (AS N02201

Inconel : UNS N06600, UNS N06625, UNS N08800,

Grade : UNS N08810, UNS N08811, UNS N08825

Monel

Grade : UNS N04400, UNS N05500

Hastelloy

Grade : UNS N10276, UNS N06022, UNS N10665

Alloy 20

Grade : UNS N08020

Copper Nickel

Grade : UNS C70600 (90:10), UNS C71500 (70:30)

Titanium

Specification : B861, B862, B338

Grade : Gr.1 R 55250 (CP4), Gr.2 R 50400 (CP3)
Gr.3 50550 (CP2), GrA 50700 (CP1)
Gr.7 52400, Gr.11 R 52250

Specification : ASTM B861, B862, B338

Grade : Gr.5 R 56400 (6Al-4V), Gr.23 R 56401 (6Al-4V-ELI), Gr.12 R 53400

TYPE

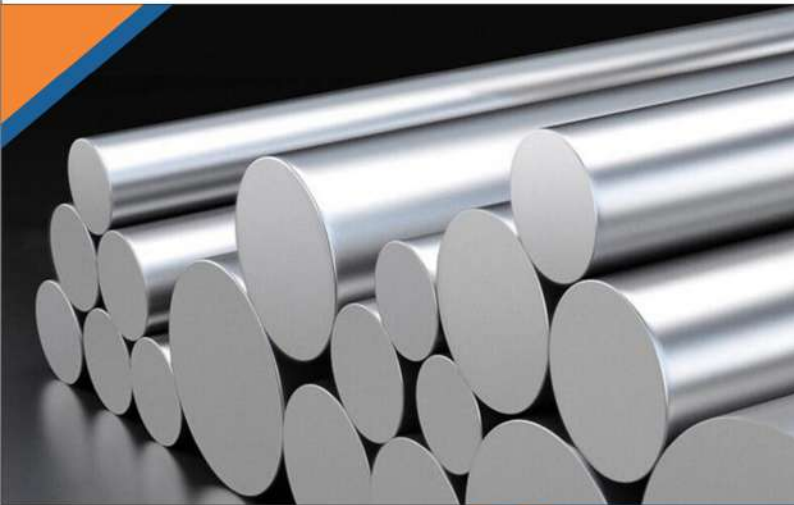
• NOMINAL SIZE PIPE • OD SIZE PIPE • SQUARE PIPE

• EN 10204 3.1/3.2
Mill Test Certificate • NACE MR0175



Patel Metals & Tubes Pvt. Ltd.

(AN ISO 9001 : 2015 CERTIFIED COMPANY)



BARS & SHAFTS

Stainless Steel

Size : 5 mm to 500mm dia
Length : 500 mm to 6000 mm long and in cut to size
Form : Round, Square, Hex (A/F), Rectangle, Flat etc.
Grade : 202, 303, 304, 304L, 304H, 316, 316L, 316Ti, 316H, 309S, 309H, 310S, 310H, 317, 317L, 321, 321H, 347, 347H, 904L, 409, 409M, 410, 420, 430, 431, 446, 441, 444, SMO 254, 253MA

Carbon Steel

Specification : ASTM A234 Gr. 45 C8, 55 C8, WPB, WPC, A420 Gr.WPL3, WPL6, WPL9

Alloy Steel

Specification : ASTM A234 Gr.WP1, WP5, WP9, WP11, WP12, WP22, WP91, P92

Duplex Steel

Specification : ASTM A815
Grade : UNS 531803, UNS 532205 (2205), UNS 532750 (2507), UNS 532760 (Zeron 100)

Nickel Alloy

Nickel Grade : UNS N02200, UNS N02201

Inconel

Grade : UNS N06600, UNS N06625, UNS N08800, UNS N08810, UNS N08811, UNS N08825

Monel

Grade : UNS N04400, UNS N05500

Hastelloy

Grade : UNS N10276, UNS N06022, UNS N10665

Alloy 20

Grade : UNS N08020

Copper Nickel

Grade : UNS C70600 (90:10), UNS C71500 (70:30)

Titanium

Specification : ASTM B363
Grade : Gr.1 R 56250 (CP4), Gr.2 R 50400 (CP3), 50550 (CP2), Gr.4 50700 (CP1), Gr.7 52400, Gr.11 R 52250

Specification

Grade : ASTM B363
Gr.5 R 56400 (6Al-4V), Gr.23 R 56401 (6Al-4V-ELI), Gr.12 R 53400

TYPE

- Round
- Square
- Hex (A/F)
- Rectangle



Mill Test Certificate

- EN 10204 3.1/3.2
- NACE Mr0175
- IBR Test Certification



Patel Metals & Tubes Pvt. Ltd.

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FASTENERS

Stainless Steel

Grade : : 202, 303, 304, 304L, 304H, 316, 316L, 316Ti, 316H, 309S, 309H, 310S, 310H, 317, 317L, 321, 321H, 347, 347H, 904L, 409, 409M, 410, 420, 430, 431, 446, 441, 444, SMO 254, 253MA

Alloy Steel

ASTM A193 Gr.B7, A193 Gr. B16, A194 Gr.21-1, A194 Gr.7

Duplex Steel

Grade : : UNS S31803, UNS S32205 (2205), UNS S32750 (2507), UNS S32760 (Zeron 100)

Nickel Alloy

Nickel
Grade : : UN5 NO2200, UNS NO2201

Inconel

Grade : : UNS N06600, UNS N06625, UNS N08800, UNS N08810, UNS N08811, UNS N08825

Monel

Grade : : UNS NO4400, UNS NO5500

Hastelloy

Grade : : UNS N10276, UNS N06022, UNS N10665

Alloy 20

Grade : : UNS N08020

Copper Nickel

Grade : : UNS C70600 (90:10), UNS C71500 (70:30)

Titanium

specification : : ASTM 0381

Grade : : Gr.1 R 56250 (CP4), Gr.2 R 50400 (CP3), Gr.3 50550 (CP2), Gr.4 50700 (CF 1), Gr.7 52400 Gr.11 R52250

Specification : : ASTM 0381

Grade : : Gr.5 R 56400 (6A1-4V), Gr.23 R 56401 (6AL-4V-EL1), Gr.12 R 53400

TYPE

- BOLTS
- NUTS
- WASHERS
- ANCHOR FASTENERS
- STUD BOLT
- EYE BOLT
- STUD THREADED ROD
- COTTER PIN
- SOCKET HEAD SCREW
- FINE FASTENERS & SPARES
- FOUNDATION
- FASTENERS

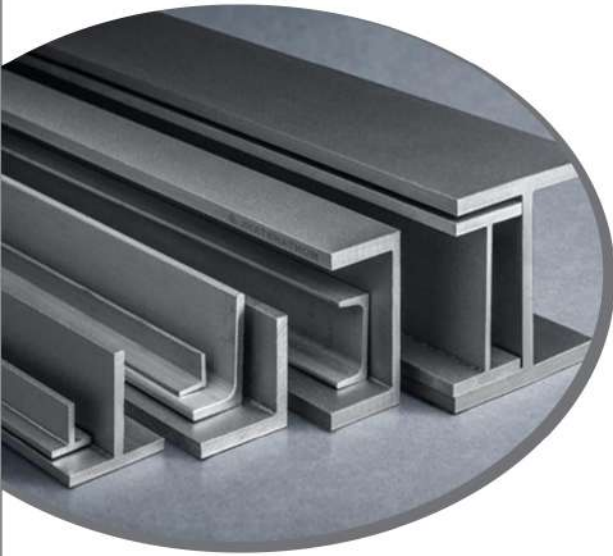
Mill Test Certificate

- EN 10204 3.1/3.2
- NACE Mr0175
- IBR Test Certification



Patel Metals & Tubes Pvt. Ltd.

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ANGLE / CHANNEL / FLAT BAR

Stainless Steel : 304/304L, 316/316L/316Ti, 321, 310/310S, 317/317L,

347, 17-4Ph, 15-5Ph, 904L, 410, 420, 430, 431, 430F, 416, 440C etc.

Copper, Brass, Aluminium, Hast Alloy, Titanium, Monel, Inconel, Nickel, etc.

Duplex Steel : UNS 31803, UNS32205, UNS 32750, UNS 32760

Alloy Steel : F5, F9, F11, F22, F91.

Carbon Steel, Mild Steel, (EN Series)

Specification : ASTM, AISI, ASME, DIN, UNS etc.

Sizes of Angles : 20mm to 150mm, in Thk = 3mm to 12mm

Sizes of Channels : 20mm to 500mm, in Thk = 3mm to 50mm

FLANGES

Stainless Steel : ASTM A182 F304/ 304L/ 304H/ 316/ 316L/ 317/ 317L/ 321/ 310/ 347/904L etc.

Carbon Steel : ASTM A105/ A694 F42/ 46/52/56/60/65/ 70/ A350 LF2/ A350LF3, etc.

Alloy Steel : ASTM A182 F1/ F5/ F9/ F11/ F22/ F91 etc.

Others : Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead etc.

Types : Weldneck, Slipon, Blind, Socket Weld, Lap Joint, Spectacles, Ring Joint, Oriface, Long Weldneck, Deck Flange, etc.

Size : ½" NB TO 24" NB.

Class : 150#, 300#, 600#, 900#, 1500# & 2500#.



BUTT-WELD FITTINGS

Stainless Steel : ASTM A403 WP 304/ 304L/ 304H/316/ 316L/ 317/ 317L/ 321/ 310/ 347/904L etc.

Carbon Steel : ASTM A234 WPB/A420 WPL3/A420 WPL6

Mild Steel : IS 1239 Part 2 / IS 3589

Alloy Steel : ASTM A234 WP1/ WP5/ WP9/ WP11/ WP22/ WP91 etc.

Duplex & Super Duplex Steel : UNS S31803, UNS S32750, UNS S32760, 904L, Alloy 20

Others : Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead, etc.

Types : Elbow, Tee, Reducer, Return Bends, Stub-Ends, Cap, Collar, Cross, Insert etc.

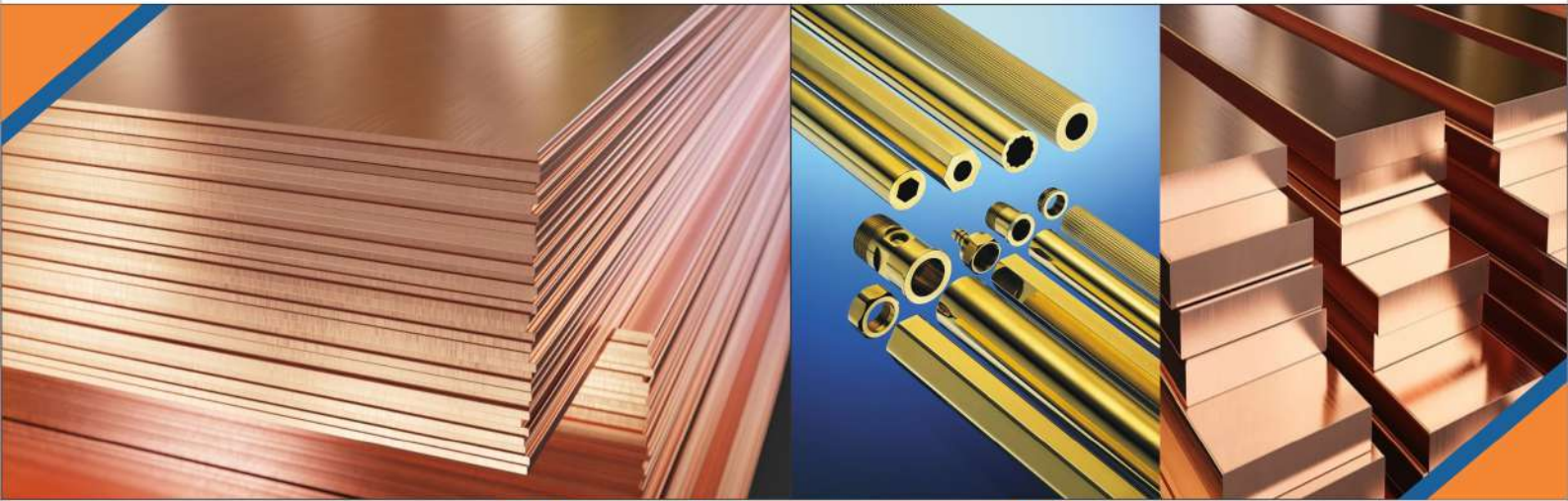
Size : 1/4" NB TO 32" NB. (Seamless & Welded)

Wall Thickness : Sch. 5S To Sch. XXS.



Patel Metals & Tubes Pvt. Ltd.

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COPPER & BRASS

Copper BRASS

DHP Copper, ETP Copper, DPA Copper OFHC Copper
63 / 37 Brass, 70 / 30 Brass, Admiralty Brass,
Aluminium Brass & other Compositions of Brass.

CUPRONICKEL BRONZES

95 / 5 alloy, 90 / 10 alloy & 70 / 30 alloy.
Phosphorous Bronze Aluminium Bronze & Gun Metal,
Phosphorous Bronze A B1 / A B2 Bush Round.



COPPER TUBES

TUBES

RODS STRIPS / PROFILES WIRES S. E. WIRES

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 & Cupronickel.
In all size upto 160mm diameter in Copper, Brass and Bronzes.
Copper Strips and sections as per clients specific requirements.
Copper wires upto 42 swg in bright annealed condition.
Super enamelled copper wires upto 42 swg.



BRASS TUBES



BRASS RODS

SPECIFICATIONS

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



COPPER TUBES & SECTIONS



BRASS FLAT BAR



COPPER FLAT BAR



BRASS PIPE FITTINGS



COPPER PIPE FITTINGS



Patel Metals & Tubes Pvt. Ltd.

(AN ISO 9001 : 2015 CERTIFIED COMPANY)

CHEMICAL COMPOSITION

	Designation/Grade	%C (Max)	%Mn (Max)	%P (Max)	%S (Max)	%Si (Max)	%Cr	%Ni
Austenitic Cr-Mn	201#	0.15	5.5-7.5	0.060	0.030	1.00	16.00-18.00	3.50-5.50
	201L	0.030	5.5-7.5	0.045	0.030	0.75	16.00-18.00	3.50-5.50
	201LN	0.030	6.4-7.5	0.045	0.015	0.75	16.00-17.50	4.00-5.00
	202	0.15	7.5-10.0	0.060	0.030	1.00	17.00-19.00	4.00-6.00
	204CS	0.10	6.5-9.0	0.060	0.010	0.75	16.00-17.50	1.50-3.50
	JSLAUS(J1)	0.08	6.0-8.0	0.070	0.010	0.75	16.00-18.00	4.00-6.00
	J-4	0.10	8.50-10.0	0.080	0.010	0.75	15.00-16.00	1.00-2.00
Austenitic Cr-Ni	301	0.15	2.00	0.045	0.030	1.00	16.00-18.00	6.00-8.00
	301L	0.030	2.00	0.045	0.030	1.00	16.00-18.00	6.00-8.00
	301LN	0.030	2.00	0.045	0.030	1.00	16.00-18.00	6.00-8.00
	304	0.07	2.00	0.045	0.030	0.75	17.50-19.50	8.00-10.50
	304M	0.04-0.10	2.00	0.045	0.030	0.75	18.00-20.00	8.00-10.50
	304L	0.030	2.00	0.045	0.030	0.75	17.50-19.50	8.00-12.00
	304LN	0.030	2.00	0.045	0.030	0.75	18.00-20.00	8.00-12.00
	309	0.20	2.00	0.045	0.030	0.75	22.00-24.00	12.00-15.00
	3095	0.08	2.00	0.045	0.030	0.75	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
	310S	0.08	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	0.75	16.00-18.00	10.00-14.00
	316L	0.030	2.00	0.045	0.030	0.75	16.00-18.00	10.00-14.00
	316LN	0.030	2.00	0.045	0.030	0.75	16.00-18.00	10.00-14.00
	316Ti	0.08	2.00	0.045	0.030	0.75	16.00-18.00	10.00-14.00
	317	0.08	2.00	0.045	0.030	0.75	18.00-20.00	11.00-15.00
	317L	0.030	2.00	0.045	0.030	0.75	18.00-20.00	11.00-15.00
	317LN	0.030	2.00	0.045	0.030	0.75	18.00-20.00	11.00-15.00
	31727	0.030	1.00	0.030	0.030	1.00	17.50-19.00	14.50-16.50
	321	0.08	2.00	0.045	0.030	0.75	17.00-19.00	9.00-12.00
	347	0.08	2.00	0.045	0.030	0.75	17.00-19.00	9.00-13.00
Martensitic	410	0.08-0.15	1.00	0.040	0.030	1.00	11.50-13.50	0.75max
	415	0.05	0.50-1.00	0.030	0.030	0.60	11.50-14.00	3.50-5.50
	420	0.15 min	1.00	0.040	0.030	1.00	12.00-14.00	0.75max
	431	0.20	1.00	0.040	0.030	1.00	15.00-17.00	1.25-2.50
	JBS	0.6-0.7	1.00	0.030	0.015	0.75	12.50-13.50	-
Ferritic	405	0.08	1.00	0.040	0.030	1.00	11.50-14.50	0.60
	409	0.030	1.00	0.040	0.020	1.00	10.50-11.70	0.50 max
	409L	0.030	1.00	0.040	0.030	1.00	10.50-11.70	0.50 max
	410S	0.08	1.00	0.040	0.030	1.00	11.50-13.50	0.60 max
	430	0.12	1.00	0.040	0.030	1.00	16.00-18.00	0.75 max
	430Ti	0.030	1.00	0.040	0.030	1.00	16.00-19.00	-
	436	0.120	1.00	0.040	0.030	1.00	16.00-18.00	-
	4367	0.025	1.00	0.040	0.030	1.00	16.00-19.00	-
	439	0.030	1.00	0.040	0.030	1.00	17.00-19.00	0.50 max
	441	0.030	1.00	0.040	0.015	1.00	17.50-18.50	-
Ferritic + Martensitic								
	409M	0.030	0.8-1.5	0.030	0.030	1.00	10.80-12.50	1.50 max
Duplex (Austenitic + Ferritic)								
	2205	0.030	2.00	0.030	0.020	1.00	22.00-23.00	4.50-6.50
	2304	0.030	2.50	0.040	0.030	1.00	21.50-24.50	3.00-5.50
	31803	0.030	2.00	0.030	0.020	1.00	21.00-23.00	4.50-6.50



Patel Metals & Tubes Pvt. Ltd.

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			MECHANICAL COMPOSITION			
%Mo	N PPM (Max)	%OTHERS	Tensile Strength MPa (min)	Yield strength MPa (min)	%Elongation (min)	Headness Rockwell B (max)
-	2500	-	655	310	40	100
-	2500	-	655	260	40	95
-	1000-2500	Cu = 1.0 Max	655	310	45	100
-	2500	-	620	260	40	100
-	1000-2000	Cu = 2.0-4.0	620	310	40	100
-	1000	Cu = 1.5-2.0	550	205	40	95
-	2000	Cu = 1.5-2.0	650	325	40	100
-	1000	-	515	205	40	95
-	2000	-	550	220	45	100
-	700-2000	-	550	240	45	100
-	1000	-	515	205	40	92
-	-	-	515	205	40	92
-	1000	-	485	170	40	92
-	1000-1600	-	515	205	40	95
-	-	-	515	205	40	95
-	-	-	515	205	40	95
-	-	-	515	205	40	95
-	-	-	515	205	40	95
2.00-3.00	1000	-	515	205	40	95
2.00-3.00	1000	-	485	170	40	95
2.00-3.00	1000-1600	-	515	205	40	95
2.00-3.00	1000	Ti=5X(C+N) Min., 0.70Max	515	205	35	95
3.00-4.00	1000	-	515	205	40	95
3.00-4.00	1000	-	515	205	40	95
3.00-4.00	1000-2200	-	550	240	35	95
3.80-4.50	1500-2100	Cu=2.8-4.0	550	245	40	96
-	1000	Ti=5X(C+N)Min., 0.70Max	515	205	40	95
-	-	Nb= 10XCMIn., 1.00 Max.	515	205	20	92
-	-	-	450	205	15	96
0.50-1.00	-	-	795	620	15	32rc
0.50 max	-	-	690	-	-	96
-	-	-	-	-	-	29rc
-	-	-	-	-	20	-
-	-	Al = 0.10-0.30	415	170	20	88
-	-	Ti = 6X(C+N)Min., 0.5Max.	380	170	20	88
-	300	Ti = 6X(C+N)Min., 0.75Max.	380	170	22	88
-	-	-	415	205	22	89
-	-	-	450	205	22	89
-	-	Ti = 0.10-1.00	360	175	22	90
0.75-1.25	-	Nb = 5XC Min., 0.70Max.	450	240	20	89
0.75-1.25	250	%Nb or & Ti or %combination = 8X(C+N) Min., 0.80 Max.	410	245	22	96
-	300	Ti = 0.20+4X(C+N) Min., 1.10 Max. Al=0.5 Max	415	205	18	89
-	-	Nb = 3X%C+0.3Min. 1% Max., T1=0.1-06%	430	250	-	88
-	300	Ti= 0.75Max	450	275	20	90
3.0-3.50	1400-2000	-	655	450	25	31rc
0.05-0.60	500-2000	Cu 0.05 Min.-0.60Max	600	400	25	32rc
2.50-3.50	800-2000	-	620	450	25	31rc



Patel Metals & Tubes Pvt. Ltd.

(AN ISO 9001 : 2015 CERTIFIED COMPANY)

EQUIVALENT INTERNATIONAL STAINLESS STEEL GRADES

	JSL Designation/ Grade	UNS Designation	USA - Canada / AISI - ASTM - ASME	INDIA/IS Letter Symbol	European	Chinese	GERMANY/DIN Designation	Japan/JIS	GOST
Austenitic Cr-Mn	201	20100	201	X10Cr17Mn6Ni4N20	-	-	X12CrMnNiN17-7-5	SUS201	-
	201L	20103	201L	-	1.4371	-	X2CrMnNiN17-7-5	-	-
	201LN	20153	201LN	-	-	-	-	-	-
	202	20200	202	X10Cr18Mn9Ni5	-	-	X12CrMnNiN18-9-5	SUS202	-
	204Cu	20430	-	-	-	-	-	-	-
	JSLAUS(J1)	-	-	-	-	-	-	-	-
Austenitic Cr-Ni	301	30100	301	X10Cr17Ni7	1.4310	1Cr17Ni7	X12CrNi17-7	SUS301	-
	301L	30103	301L	-	-	-	-	-	-
	301LN	30153	301LN	-	1.4318	-	X2CrNi18-7	-	-
	304	30400	304	X04Cr19Ni9	1.4301	0Cr18Ni9	X5CrNi18-10	SUS304	-
	304H	30409	304H	-	-	-	-	-	-
	304L	30403	304L	-	1.4307	-	X2CrNi18-9	SUS304L	-
	304LN	30453	304LN	-	1.4311	-	X2CrNi18-10	SUS304LN	-
	309	30900	309	X15Cr24Ni13	1.4828	-	-	-	-
	309S	30908	309S	-	1.4833	1Cr23Ni13	X7CrNi23-14	SUS309S	-
	310	31000	310	X20Cr25Ni20	-	-	X15CrNiSi25-20	SUH310	20Ch25N20S2
	310S	31008	310S	-	1.4845	0Cr25Ni20	X12CrNi25-21	SUS310S	20Ch23N18
	316	31600	316	X04Cr17Ni12Mo2	1.4401	0Cr17Ni12Mo2	X5CrNiMo17-12-2	SUS316	-
	316L	31603	316L	X02Cr17Ni12Mo2	1.4404	00Cr17Ni14Mo2	X2CrNiMo17-13-2	SUS316L	-
	316LN	31653	316LN	-	1.4429	-	X2CrNiMo17-11-2	SUS316LN	-
	316Ti	31635	316Ti	X04Cr17Ni12Mo2Ti	1.4571	0Cr18Ni12Mo2Ti	X6CrNiMoTi17-12-2	SUS316Ti	10Ch17N13M2T
	317	31700	317	-	-	-	-	-	-
	317L	31703	317L	-	1.4438	00Cr19Ni13Mo3	X2CrNiMo18154	SUS317L	-
	317LN	31753	317LN	-	-	-	-	-	-
	J31727	31727	-	-	-	-	-	-	-
Martensitic	410	41000	410	X04Cr18Ni10Ti	1.4541	0Cr18Ni10Ti	X6CrNiTi18-10	SUS321	08Ch18N10T
	415	41500	-	-	1.4313	-	X3CrNiMo13-4	-	-
	420	42000	420	X12Cr13	1.4021	-	X20Cr13	SUS420J1	-
	431	43100	431	-	1.4057	1Cr17Ni2	X17CrNi15-2	-	20Ch17N2
	JBS	-	-	-	-	-	-	-	-
Ferritic	405	40500	405	X04Cr12	1.4002	0Cr17Ni2	X6CrAl13	SUS405	-
	409	40900	409	-	1.4512	-	X2CrTi12	SUH409	-
	409RC	-	-	-	-	-	-	-	-
	410S	41008	410S	-	1.4000	0Cr13	X6Cr-13	SUS403	-
	430	43000	430	X07Cr17	1.4016	1Cr17	X6Cr17	SUS430	-
	430Ti	-	-	-	-	-	X3CrTi17	SUS430LX	-
	436	43600	436	-	-	-	-	-	-
	436L	43932	436L	-	-	-	-	SUS436L	-
	439	43035	439	-	-	00Cr18Ti	X3CrTi17	-	-
	441	43940	-	-	1.4509	-	X2CrTiNb18	-	-
Ferritic + Martensitic									
	409M	-	-	-	-	-	-	-	-
Duplex (Austenitic + Ferritic)									
	2205	32205	2205	-	-	-	-	-	-
	31803	31803	-	-	1.4462	-	X2CrNiMoN 22-5-3	SUS329J3L	-
	2304	32304	2304	-	1.4362	-	X2CrN N 23-4	-	-



Patel Metals & Tubes Pvt. Ltd.

(AN ISO 9001 : 2015 CERTIFIED COMPANY)

Chemical Composition of Nickel Alloys

NOMINAL CHEMICAL COMPOSITION, % (NOT FOR SPECIFICATION PURPOSES)													
Nickel	NI	C	Mn	Fe	S	Si	Cu	Cr	Co	Mo	Al	Ti	Other
Nickel	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	Mg 0.05
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	Mg 0.08
Nickel 270	99.98	0.01	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	Mg<0.001
MONEL alloy 400	63.0min	0.15	1.0	25 max	0.024 max	0.05 max	31.0	-	-	-	-	-	-
MONEL k alloy-500	63.0min	0.15	1.5max	2.0 max	0.010max	0.5	30.0	-	-	-	2.9	0.6	-
Cast MONEL alloy	63.0min	0.07	0.75	2.5max	0.02max	0.04max	30.0	0.10max	-	0.20max	0.05max	0.01max	-
Cast MONEL alloy	63.0min	0.03max	0.20max	2.5max	0.02max	0.04max	30.0	0.10	-	0.20max	0.05 max	0.01max	-
INCONEL alloy 600	72.0min	0.15max	1.0max	8.0	0.015max	0.05max	0.5max	15.5	-	-	-	-	Nb + Ta
INCONEL alloy 625	60.5	0.10max	0.25	5.0max	0.015max	0.5max	-	21.5	-	9.0	0.25	0.25	3.65
INCOLOY alloy 800	32.5	0.10max	1.5max	Bal	0.015max	1.0max	0.75max	21.0	-	-	0.38	0.38	-
INCOLOY alloy 825	42.0	0.05max	1.0max	Bal	0.03max	0.5max	2.25	21.5	-	3.0	0.20max	0.9	-
INCOLOY alloy 904	32.5	0.025	0.025	Bal	0.015	0.25	0.25	-	14.5	-	0.1	1.6	-
INCOLOY alloy DS	37.0	1.2	1.2	Bal	-	2.3max	2.3max	18.0	-	-	-	0.20	-
Hastelloy B	Rest/Bal	0.10	0.80	5.58	0.7	-	0.6	1.25	28	-	-	-	-
Hastelloy C	Rest/Bal	0.07	0.80	5.75	0.7	-	16.0	1.25	17	-	-	-	-
Hastelloy G Alloy	Rest/Bal	0.05	1.0-2.0	18.0-21.0	0.7	-	1.5 21-23.5	1.25	5.575	-	-	-	-

PHYSICAL AND MECHANICAL PROPERTIES

Nickel	Density Kg./mm ³	Melting range C	Specific heat at 20°C J/Kg C	Thermal Conductivity at 20°C W/m C	Thermal expansion 10-c/C 20-95°C	Electrical resistivity at 20°C Mocrohm cm	Tensile Strength N/mn ³	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	340-420	75-100
Nickel 205	8.89	1435-1445	456	74.9	13.3	9.5	340	77
Nickel 212	8.89	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	1435-1445	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
INCOLOY alloy 800	7.95	1355-1385	502	11.7	14.2	99	520-700	121-188
INCOLOY alloy 825	8.14	1370-1400	441	10.9	14.0	113	590-730	121-183
INCOLOY 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



Patel Metals & Tubes Pvt. Ltd.

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CHEMICAL COMPOSITIONS OF TITANIUM GRADES & ALLOYS

Trade Name	UNS	Titanium Industry Specifications	Chemical Composition	Min.Tensile (KSI)	Min.Yield (KSI)	Hardness	Modulus of Elasticity	Poisson's Ratio
Grade 1	UNS R50250	AMS AMS-T-81915 ASTM F67(1), B265(1), B338(1), B348(1), B381(F-1), B861(1), B862(1), B863(1), F467(1), F468(1), F1341 MIL SPEC MIL-T-81556	C 0.10 max Fe 0.20 max H 0.015 max N 0.03 max O 0.18 max Ti Remaining	35	25	14.9	103 GPa	0.34-0.40
Grade 2	UNS R50400	AMS 4902, 4941, 4942, AMS-T-9046 ASTM F67(2), B265(2), B337(2), B338(2), B348(2), B367(C-2), B381(F-2), B861(2), B862(2), B863(2), F467(2), F468(2), F1341 MIL SPEC MIL-T-81556 SAE J467(A40)	C 0.10 max Fe 0.30 max H 0.015 max N 0.03 max O 0.25 max Ti Remaining	50	40	14.9	103 GPa	0.34-0.10
Grade 5	UNS R56400	AMS 4905, 4911, 4920, 4928, 4930, 4931, 4932, 4934, 4935, 4954, 4963, 4965, 4967, 4993, AMS-T-9046, AMS-T-81915, AS7460, AS7461 ASTM B265(5), B348(5), B367(C-5), B381(F-5), B861(5), B862(5), B863(5), F1472 AWS A5.16 (ERTi-5) MIL SPEC MIL-T-81556	Al 5.5-6.75 max C 0.10 max Fe 0.40 max H 0.015 max N 0.05 max O 0.20 max Ti Remaining V 3.5-4.5	130	120	16.4	114 GPa	0.30-0.33
Grade 7	UNS R52400	ASTM B265(7), B338(7), B348(F-7), B861(7), B862(7), B863(7), F467(7), F468(7)	C 0.10 max Fe 0.30 max H 0.015 max N 0.03 max O 0.25 max Ti Remaining Other Pd 0.12-0.25	50	40	14.9	103 GPa	-
Grade 9	UNS R56320	AMS 4943, 4944, 4945, AMS-T-9046 ASME SFA5.16(ERTi-9) ASTM B265(9), B338(9), B348(9), B381(9), B861(9), B862(9), B863(9) AWS A5.16(ERTi-9)	Al 2.5-3.5 C 0.05 max Fe 0.25 max H 0.013 max N 0.02 max O 0.12 max Ti Remaining V 2.0-0-3.0	90	70	13.1	107 GPa	0.34
Grade 12	UNS R53400	ASTM B265(12), B338(12), B348(12), B381(F-12), B861(12), B862(12), B863(12)	C 0.08 max Fe 0.30 max H 0.015 max Mo 0.2-0.4 N 0.03 max Ni 0.6-0.9 O 0.25 max Ti Remaining	70	50	14.9	103 GPa	-



Patel Metals & Tubes Pvt. Ltd.

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Titanium Alloys

Grade 1	UNS R56400	Titanium 6Al-4V
Grade 2	UNS R53400	Titanium 5Al-2.5Sn
Grade 5	UNS R56320	Titanium 3Al-2.5V
Grade 7	Titanium CP4	Titanium Grade 12-Ti-0.3-0.8Ni,
Grade 9	Titanium CP3	Titanium Grade 23
Grade 12	Titanium CP2	Titanium 6Al-4V ELI.
UNS R50250	Titanium CP1	
UNS R50400	CP Ti-0.15Pd	

Aluminium Alloys

1050 / 19500	6082 / He 30	5056 / 55000	2014 / 24345
1060 / 19600	6061	5052 / 52000	2011
7475 / 8011	6101	3003	2007
7075 / DT5124	5754	2024	
7050	5086 / 53000	2017	
6351	5083 / 54300	2014A	

Chemical Composition of Carbon Alloys

GRADE	C	Mn	Si	S	P	Cr	Ni	Mo
EN-8	.35-.45	.60-1.00	.10-.35	.050MAX	.050MAX	-	-	-
EN-8D	.40-.45	.70-.90	.05-.35	.060 MAX	.060 MAX	-	-	-
EN-9	.50-.60	.50-.80	.05-.35	.040 MAX	.040 MAX	-	-	-
EN-19	.35-.45	.50-.80	.10-.35	.040	.040	.90-1.40	-	.20-.40
EN-24	.35-.45	.45-.70	.10-.35	.040	.040	.90-1.40	1.30-1.80	.20-.40
EN-31	.90-1.20	.30-.75	.10-.35	.040	.040	1.00-1.60	-	-
EN-41B	.35-.45	60 Max	.10-.45	.040	.040	1.50-1.80	40 MAX	.10-.25
EN-47	.45-.55	.50-.80	.50 Max	.040	.040	.80-1.20	-	-
20MnCr5	.17-.22	1.10-1.40	.10-.35	.035	.035	1.00-1.30	-	-
SAE-4140	.38-.43	.75-1.00	.20-.35	.035	.035	.80-1.10	.15-.25	-
SAE-8620	.18-.23	.70-.90	.20-.35	.040	.040	.40-.60	.40-.70	.15-.25
EN-353	.20 Max	.50-1.00	.35 Max	.040	.040	.75-1.25	1.00-1.50	.80-.15
EN-36C	.12-.18	.30-.60	.10-.35	.040	.040	.60-1.10	3.00-3.75	.10-.25
OHNS	.85-1.00	1.00-1.20	.15-.35	.03	.03	.50-.70	-	-
WPS-D3	2.0-2.35	.60	.60	.03	.03	11-13.50	.30	-
WPS-D2	1.40-1.60	.60	.60	.03	.03	11.0-13.0	.30	.70-1.20
H11	.33-.43	.20-.50	.80-1.20	.03	.03	4.75-5.50	.30	1.10-1.60
H13	.32-.45	.20-.50	.80-1.20	.03	.03	4.75-5.50	.30	1.10-1.75
DIN 1.2714	.50-.60	.65-.95	.10-.40	<.004	<.015	1.0-1.20	1.50-1.80	.45-.55
P20 1.2311	.40	1.45	.30	-	-	1.95	-	0.20
P20 1.2738	.35-.45	1.30-1.60	.20-.40	Max .035	Max .030	1.80-2.10	.90-1.20	.15-.25
P20 1.2316	.33-.43	Max 1.00	Max 1.00	Max .005	-	15.0-17.0	Max 1.00	1.00-1.30



Patel Metals & Tubes Pvt. Ltd.

(AN ISO 9001 : 2015 CERTIFIED COMPANY)

Stainless Steel Pipe Dimension as per ASTM and weight per Mtr (ANSI B 36.19-1965)

Nomical Bore		Outside Diameter	Schedule 5S		Schedule 10S		Schedule 40S		Schedule 80S		Schedule 160S		Schedule XXS	
MM	INCH	MM	Wt MM	Weight (Kg/m)	Wt MM	Wight (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	1.24	0.276	1.24	0.28	1.73	0.37	2.41	0.47	-	-	-	-
6	1/4	13.7	1.24	0.390	1.65	0.49	2.24	0.631	3.02	0.80	-	-	-	-
10	3/8	17.1	1.24	0.490	1.65	0.63	2.31	0.845	3.20	1.10	-	-	-	-
15	1/2	21.3	1.65	0.800	2.11	1.00	2.77	1.27	3.75	1.62	4.75	1.94	7.47	2.55
20	3/4	26.7	1.65	1.03	2.11	1.28	2.87	1.68	3.91	2.20	5.54	2.89	7.82	3.63
25	1	33.4	1.65	1.30	2.77	2.09	3.38	2.50	4.55	3.24	6.35	4.24	9.09	5.45
32	1.1/4	42.2	1.65	1.65	2.77	2.70	3.56	3.38	4.85	4.47	6.35	5.61	9.70	7.77
40	1.1/2	48.3	1.65	1.91	2.77	3.11	3.68	4.05	5.08	5.41	7.14	7.25	10.16	9.54
50	2	60.3	1.65	2.40	2.77	3.93	3.91	5.44	5.54	7.48	8.74	11.1	11.07	13.44
65	2.1/2	73.0	2.11	3.69	3.05	5.26	5.16	8.63	7.01	11.4	9.53	14.9	14.2	20.39
80	3	88.9	2.11	4.51	3.05	6.45	5.49	11.30	7.62	15.2	11.1	21.3	15.24	27.65
100	4	114.3	2.11	5.84	3.05	8.36	6.02	16.07	8.56	22.3	13.49	33.54	17.12	41.03
125	5	141.3	2.77	9.47	3.40	11.57	6.55	21.8	9.53	31.97	15.88	49.11	19.05	57.43
150	6	168.3	2.77	11.32	3.40	13.84	7.11	28.3	10.97	42.7	18.2	67.56	21.95	79.22
200	8	219.1	2.77	14.79	3.76	19.96	8.18	42.6	12.7	64.6	23.0	111.2	22.23	107.8
250	10	273.1	3.40	22.63	4.19	27.78	9.27	60.5	12.7	96.0	28.6	172.4	25.40	155.15
300	12	323.9	3.96	31.25	4.57	36.00	9.52	73.88	12.7	132.0	33.32	238.76	25.40	186.97
350	14	355.6	3.96	34.69	4.78	41.3	11.13	94.59	19.05	158.08	35.71	281.70	-	-
400	16	406.4	4.19	41.56	4.78	47.29	12.7	123.30	24.41	203.33	40.46	365.11	-	-
450	18	457.2	4.19	46.80	4.78	53.42	14.27	155.80	23.8	254.36	45.71	466.40	-	-
500	20	508.0	4.78	59.25	5.54	68.71	15.09	183.42	26.19	311.2	49.99	564.68	-	-
600	24	609.6	5.54	82.47	6.35	94.45	17.48	255.41	30.96	442.08	59.54	808.22	-	-



Patel Metals & Tubes Pvt. Ltd.

(AN ISO 9001 : 2015 CERTIFIED COMPANY)

CARBON STEEL SEAMLESS PIPE DIMENSION & WELDED (ANSI B 36.10)

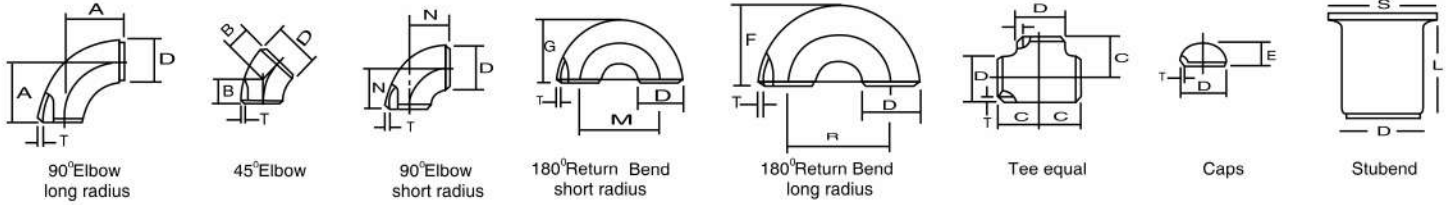
Nomical pipe Size	OD mm	Schedule 10		Schedule 20		Schedule 30		Schedule Standard		Schedule 40		Schedule 60		Schedule XS		Schedule 80		Schedule 100		Schedule 120		Schedule 140		Schedule 160		Schedule XXS		
		Wall kg/m	Wt. kg/m	Wall kg/m	Wt. kg/m	Wall kg/m	Wt. kg/m	Wall mm	Wt. mm	Wall mm	Wt. mm	Wall mm	Wt. mm	Wall mm	Wt. mm	Wall mm	Wt. mm	Wall mm	Wt. mm	Wall mm	Wt. mm	Wall mm	Wt. mm	Wall mm	Wt. mm	Wall mm	Wt. mm	
3	1/8	10.3						1.7	0.357	1.7	0.357			2.4	0.470	2.4	0.470											
6	1/4	13.7						2.2	0.625	2.2	0.625			3.0	0.804	3.0	0.804											
10	3/8	17.1						2.8	1.26	2.8	1.26			3.7	1.10	3.2	1.10											
15	1/2	21.3						2.8	1.26	2.8	1.26			3.7	1.62	3.7	1.62							4.8	1.95	7.5	2.54	
20	3/4	26.7						2.9	1.68	2.9	1.68			3.9	2.19	3.9	2.19							5.6	2.89	7.8	3.63	
25	1	33.4						3.4	2.50	3.4	2.50			4.5	3.23	4.5	3.23							6.4	4.23	9.1	5.45	
32	1 1/4	42.2						3.6	3.38	3.6	3.38			4.8	4.47	4.9	4.46							6.4	5.60	9.7	7.97	
40	1 1/2	48.3						3.7	4.05	3.7	4.05			5.1	5.40	5.1	5.40							7.1	7.23	10.2	9.58	
50	2	60.3						3.9	5.43	3.9	5.43			5.5	7.47	5.5	7.47							8.7	11.1	11.1	13.4	
65	2 1/2	73.0						5.2	8.62	5.2	8.62			7.0	11.4	7.0	11.4							9.5	14.9	14.0	20.4	
80	3	88.9						5.5	11.3	5.5	11.3			7.6	15.3	7.6	15.3							11.1	21.3	15.2	27.7	
90	3 1/2	101.6						5.7	13.6	5.7	13.6			8.1	18.6	8.1	18.6									16.2	34.1	
100	4	114.3						6.0	16.1	6.0	16.1			8.6	22.3	8.6	22.3			11.1	28.3			13.5	33.5	17.1	41.1	
125	5	141.3						6.6	21.8	6.6	21.8			9.5	30.9	9.5	30.9			12.7	40.2			15.9	49.0	19.0	57.4	
150	6	168.3						7.1	28.2	7.1	28.2			11.0	42.5	11.0	42.5			14.3	54.2			18.3	67.5	21.9	79.1	
200	8	219.1		6.4	33.3	7.0	36.7	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	90.4	20.6	101	23.0	112.0	22.2	108.0	
250	10	273.0		6.4	41.7	7.8	50.9	9.3	60.2	9.3	60.2	12.7	81.5	12.7	81.5	15.1	95.8	18.3	114.7	21.4	132.9	25.4	155	28.6	172.2	25.4	155.0	
300	12	323.8		6.4	49.7	8.4	65.1	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	
350	14	355.6	6.4	54.6	7.9	68.1	9.5	81.2	9.5	81.2	11.1	94.6	15.1	126.4	12.7	107.0	19.0	158.0	23.8	195.0	27.8	224.0	31.8	253	35.7	281.0		
400	16	406.4	6.4	62.6	7.9	77.9	9.5	93.1	9.5	93.3	12.7	123.0	16.7	160.0	12.7	123.0	21.4	203.0	26.2	245.0	30.9	286.0	26.5	333	40.5	365.0		
450	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	42.2	459.0		
500	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		
550	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	600	54.0	671.0		
600	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	59.5	807.0		
650	26	660.4	7.9	128.0	12.7	203.0			9.5	153.0				12.7	203.0													
700	28	711.2	7.9	137.4	12.7	219.0	15.9	272.0	9.5	165.0				12.7	219.0													
750	30	762.0	7.9	147.0	12.7	234.6	15.9	292.6	9.5	176.0				12.7	234.6													
800	32	812.8	7.9	157.0	12.7	250.6	15.9	312.5	9.5	188.2				12.7	250.6													
850	34	863.6	7.9	167.0	12.7	266.0	15.9	332.4	9.5	200.0				12.7	266.5													
900	36	914.4	7.9	176.6	12.7	282.4	15.9	352.2	9.5	212.0				12.7	281.4													



Patel Metals & Tubes Pvt. Ltd.

(AN ISO 9001 : 2015 CERTIFIED COMPANY)

Butt Welding Pipe Fitting Dimensional Standard ANSI B-16.9, B-16.2B



Nominal Pipe Size		Outside Diameter	Center to Face				Back to Face			Center to Center			Length 'L'	
Inch.	mm	D	A	B	C	N	E	F	G	R	M	S	MSS SP43	ANSI B 16.9
1/2	15	21.3	38	16	25	—	25	48	—	76	—	34.9	50.8	76.2
3/4	20	26.7	29	11	29	—	25	43	—	57	—	42.8	50.8	76.2
1	25	33.4	38	22	38	25	38	56	41	76	51	50.8	50.8	101.6
1 1/4	32	42.2	48	25	48	32	38	70	52	95	64	63.5	50.8	101.6
1 1/2	40	48.3	57	29	57	38	38	83	62	114	76	73.0	50.8	101.6
2	50	60.3	76	35	64	51	38	106	81	152	102	92.0	63.5	152.4
2 1/2	65	73.0	95	44	76	64	38	132	100	191	127	104.8	63.5	152.4
3	80	88.9	114	51	86	76	51	159	121	229	152	127.0	63.5	152.4
3 1/2	90	101.6	133	57	95	89	64	184	140	267	178	139.7	76.2	152.4
4	100	114.3	152	64	105	102	64	210	159	305	203	157.2	76.2	152.4
5	125	141.3	190	79	124	127	76	262	197	381	254	185.7	76.2	203.2
6	150	168.3	229	95	143	152	89	313	237	457	305	215.9	88.9	203.2
8	200	219.1	305	127	178	203	102	414	313	610	406	270.0	101.6	203.2
10	250	273.1	381	159	216	254	127	518	391	762	508	324.0	127.0	254.0
12	300	323.9	457	190	254	305	152	619	467	914	610	381.0	152.4	254.0
14	350	355.6	533	222	279	356	165	711	533	1067	711	412.8	152.4	305.0
16	400	406.4	610	254	305	406	178	813	610	1219	813	470.0	152.4	305.0
18	450	457.2	686	286	343	457	203	914	686	1372	914	533.4	152.4	305.0
20	500	508.0	762	318	381	508	229	1016	762	1524	1016	584.2	152.4	305.0
22	550	559.0	838	343	419	559	254	1118	838	1676	1118	614.4	152.4	305.0
24	600	610.0	914	381	432	610	267	1219	914	1829	1219	692.2	152.4	305.0
26	650	660.0	991	406	495	660	267	—	—	—	—	—	—	—
28	700	711.0	1067	438	521	711	267	—	—	—	—	—	—	—
30	750	762.0	1143	470	559	762	267	—	—	—	—	—	—	—
32	800	813.0	1219	502	597	813	267	—	—	—	—	—	—	—
34	850	864.0	1295	533	635	864	267	—	—	—	—	—	—	—
36	900	914.0	1372	565	673	914	267							
38	950	965.0	1448	600	711	965	305							
40	1000	1016.0	1524	632	749	1016	305							
42	1050	1067.0	1600	660	762	1067	305							
44	1100	1118.0	1676	695	813	1118	343							
46	1150	1168.0	1753	727	851	1168	343							
48	1200	1219.0	1829	759	889	1219	343							



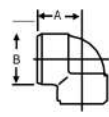
Patel Metals & Tubes Pvt. Ltd.

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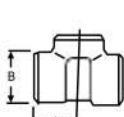
DIMENSION IN MM OF FORGED SCREWED FITTING TO ANSI B-16.11 THREADED TO ASA B 2.1



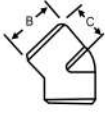
90° ELBOW



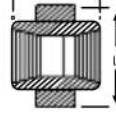
TEE



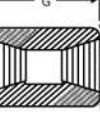
45° ELBOW



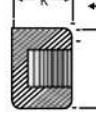
UNION



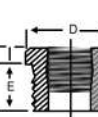
COUPLING



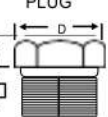
PIPE CAP



BUSHING



HEX HEAD PLUG

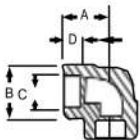


HALF COUPLING=G/2

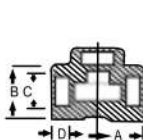
NOM	PIPE	3000 L.B.S.						COMMON FACTORS						6000 L.B.S					
BORE	O.D.	A	B	C	G	H	K	D	E	F	I	J	L	A	B	C	G	H	K
1/8"	10.3	21	22	17	32	16	19	11	10	40	-	6	-	25	25	19	32	22	-
1/4"	13.7	25	25	19	35	19	25	16	11	43	3	6	32	29	33	22	35	25	27
3/8"	17.2	29	33	22	38	22	25	17.5	13	48	4	8	38	33	38	25	38	32	27
1/2"	21.3	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	46
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"	89.0	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

SOCKET WELD FITTING TO ANSI B-16.11

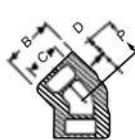
90° ELBOW



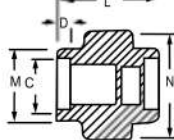
TEE



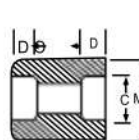
45° ELBOW



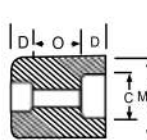
UNION



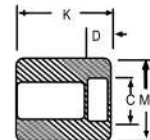
COUPLING



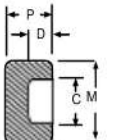
REDUCER



HALF COUPLING



CAP



NOM	PIPE	3000 L.B.S.									COMMON FACTORS				6000 L.B.S				
BORE	O.D.	A	B	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	17.5	10	10.7	10	5	8	22	22	20	25	46
1/4"	13.7	22	22	26	18	43	21.2	32	17.5	10	14.1	10	5	8	27	25	24	25	51
3/8"	17.2	25	25	26	19	48	25.4	36	19	10	17.6	10	3	9	27	28	28	26	60
1/2"	21.3	27	32	30	21	51	31	43	22	10	21.7	10	6	13	31	34	34	31	72
3/4"	26.7	34	38	36	24	57	37	50	25	13	27	13	6	13	37	42	41	35	80
1"	33.4	37	46	40	25	64	45.2	60	27	13	33.8	13	9	17	42	50	50	40	94
1 1/4"	42.2	42	56	40	29	70	55	70	30	13	42.6	13	9	17	47	59	58	41	100
1 1/2"	48.3	47	62	40	30	79	61.4	78	32	13	48.7	13	9	17	53	67	55	43	122
2"	60.3	56	75	52	37	89	75	95	38	13	61.2	16	15	23	59	84	83	55	
2 1/2"	73.02	60	92	52	48	114	91.3	125	38	16	73.8	16	14	24		102		56	
3"	89.00	76	110	52	51	127	108.8	140	44	16	89.8	16	14	24		121		58	
4"	114.50	88	137	58		150	136.9		48	19	115.5	19	14	24		152		64	

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

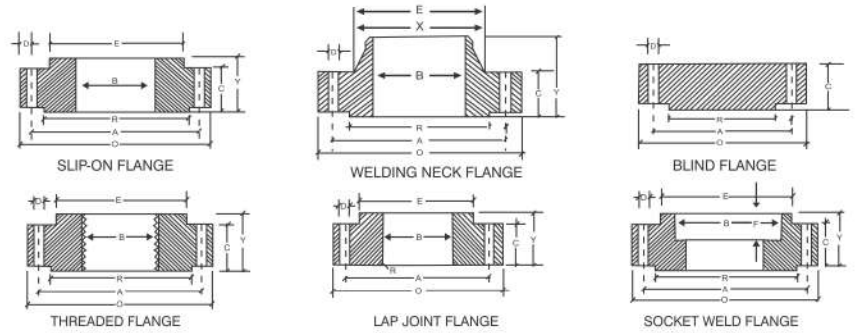


Patel Metals & Tubes Pvt. Ltd.

(AN ISO 9001 : 2015 CERTIFIED COMPANY)

FLANGES

DIMENSIONS OF CLASS 150/300/600 FLANGES AS PER B 16.5



DIMENSIONS OF CLASS 150 FLANGES AS PER B 16.5

Nominal Pipe Size	Flange Dia O	Dia of Bolt Circle A	No. of Bolt Holes D	No. of Holes	Thk. of Holes C	Dia of Hub E	Length through Hub			Dia Bore		Dia of R/F R	Depth of Socket F	Pipe Dia X
							S/O & S/W Y	W/N Y	L/J Y	S/O & S/W B	L/J B			
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	170.1	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	415	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	457.00
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 B 16.5

Nominal Pipe Size	Flange Dia O	Dia of Bolt Circle A	No. of Bolt Holes D	No. of Holes	Thk. of Holes C	Dia of Hub E	Length through Hub			Dia Bore		Dia of R/F R	Depth of Socket F	Pipe Dia X
							S/O & S/W Y	W/N Y	L/J Y	S/O & S/W B	L/J B			
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	20.3	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	38.5	206.4	52.4	98.4	62.4	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

DIMENSIONS OF CLASS 600 FLANGES AS PER B 16.5

Nominal Pipe Size	Flange Dia O	Dia of Bolt Circle A	No. of Bolt Holes D	Thk. of Holes	No. of Holes	Dia of Hub E	Length through Hub			Dia Bore		Dia of R/F R	Depth of Socket F	Pipe Dia X
							S/O & S/W Y	W/N Y	L/J Y	S/O & S/W B	L/J B			
15	95.2	66.7	15.9	4	14.3	38.1	22.2	52.4	22.3	22.3	22.8	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	28.1	42.9	11.1	26.67
25	123.8	88.9	19.0	4	17.5	54.0	27.0	61.9	26.9	34.5	35.0	50.8	12.7	33.40
32	133.3	98.4	19.0	4	20.6	63.5	28.6	66.7	28.4	43.2	43.6	63.5	14.2	42.16
40	155.6	114.3	22.2	4	22.2	69.8	31.7	69.8	31.7	49.5	50.0	73.0	15.8	48.26
50	165.1	127.0	19.0	8	25.4	84.1	36.5	73.0	36.5	62.0	62.4	92.1	17.4	60.31
65	190.5	149.2	22.2	8	28.6	100.0	41.3	79.4	41.1	74.7	75.4	104.8	19.0	73.02
80	209.5	168.3	22.2	8	31.8	117.5	46.0	82.5	45.9	90.7	91.4	127.0	-	88.90
100	273.0	215.9	25.4	8	38.1	152.4	54.0	101.6	53.8	116.1	116.8	157.2	-	114.30
125	330.2	266.7	28.6	8	44.4	188.9	60.3	114.3	60.4	143.8	141.5	185.7	-	141.30
150	355.6	292.1	28.6	12	47.6	222.2	66.7	117.5	66.5	170.7	171.4	215.9	-	168.27
200	419.1	349.2	31.7	12	55.6	273.0	76.2	133.3	76.2	221.5	222.2	269.9	-	219.07
250	508.0	431.8	34.9	16	63.5	342.9	85.7	152.4	111.2	276.3	277.3	323.8	-	273.05
300	558.8	488.9	34.9	20	66.7	400.0	92.1	155.6	117.3	327.1	328.1	381.0	-	323.85
350	603.2	527.0	38.1	20	69.9	431.8	93.7	165.1	127.0	359.1	360.1	412.7	-	355.60
400	685.8	603.2	41.3	20	76.2	495.3	106.4	177.8	139.7	410.5	411.2	469.9	-	406.40
450	742.9	654.0	44.4	20	82.6	546.1	117.5	184.1	152.4	461.8	462.2	533.4	-	457.20
500	812.8	729.9	44.4	24	88.9	609.6	127.0	190.5	165.1	513.1	514.3	584.2	-	508.00
600	939.8	838.2	50.8	24	101.6	717.5	139.7	203.2	184.1	615.9	615.9	692.1	-	609.60

All Dimensions are in Millimeters.

Flanges except Lap Joint Will be furnished with 1.6 mm raised face Class 150/300 & 6.35 mm for Class 600.
Which is included in " Thickness " (C) and Length Through Hub (Y).



Patel Metals & Tubes Pvt. Ltd.

(AN ISO 9001 : 2015 CERTIFIED COMPANY)

BUSINESS FORMULA

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

- 1) **WEIGHT OF S. S. 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



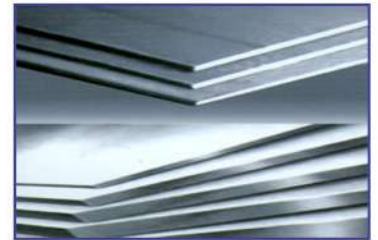
- 2) **WEIGHT OF S. S. ROUND BAR**
DIA (mm) x DIA (mm) x 0.00623 = Wt. Per Mtr.
DIA (mm) x DIA (mm) x 0.0019 = Wt. Per Feet

- 3) **WEIGHT OF S. S. 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 S. S. 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 S. S. FLAT BAR**
Width (mm) x Thick (mm) x 0.00798 = Wt. Per Mtr.
Width (mm) x Thick (mm) x 0.00243 = Wt. Per Feet



- 6) **WEIGHT OF S. S. SHEETS & PLATES**
Length (Mtrs) x Width (Mtrs) x Thick (mm) x 8 = Wt. Per PC
Length (Fit) x Width (Fit) x Thick (mm) x 3/4 = Wt. Per PC

- 7) **WEIGHT OF S. S. CIRCLE**
DIA (mm) x DIA (mm) x Thick (mm) ÷ 160 = Gms. PC
DIA (mm) x DIA (mm) x Thick (mm) x 0.0000063 = Kg. Per PC



- 8) **WEIGHT OF BRASS PIPE / COPPER PIPE**
O.D. (mm) - Thick (mm) x Thick (mm) 0.0260 = Wt. Per Mtr.

- 9) **WEIGHT OF LEAD PIPE**
O. D. (mm) - Wt. (mm) x Wt. (mm) x 0.0345 = Wt. Per Mtr.

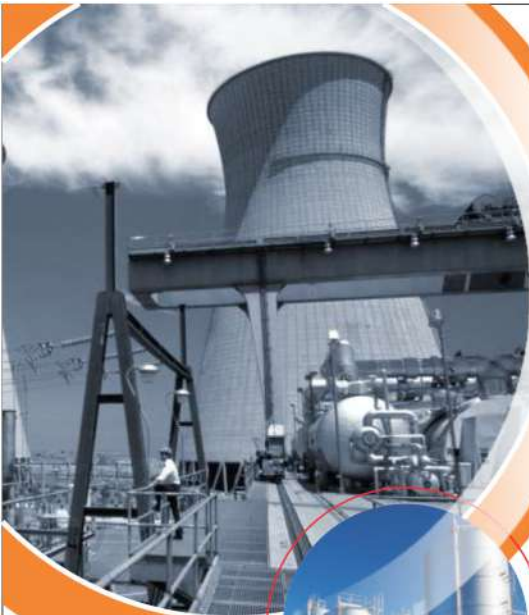
- 10) **WEIGHT OF ALUMINIUM PIPE**
O. D. (mm) - Thick (mm) x Thick (mm) x 0.0083 = Wt. Per Mtr.

- 11) **WEIGHT OF ALUMINIUM SHEET**
Length (Mtr.) x Width (Mtr.) x Thick (mm) x 2.69 = Wt. Per PC



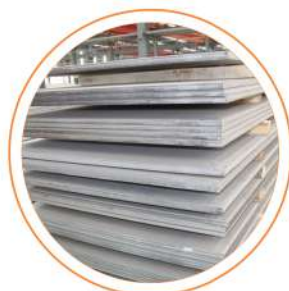
- 12) **WEIGHT OF CONVERSION OF MTR. TO FEET**
Wt. of Mtr. ÷ 3.2808 = Wt. Per Feet.





Application Industries

- Oil & Gas Industries
- Pharmacy Industries
- Steel & Power
- Engineering
- Cement Industries
- Refinery Plants
- Cement Industries
- Sugar Industries
- Chemical Industries
- Fertilizers
- Ship Building
- Water Piping Solution
- Beverage Industries
- Fire Fighting Systems
- Automobile Industries



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