

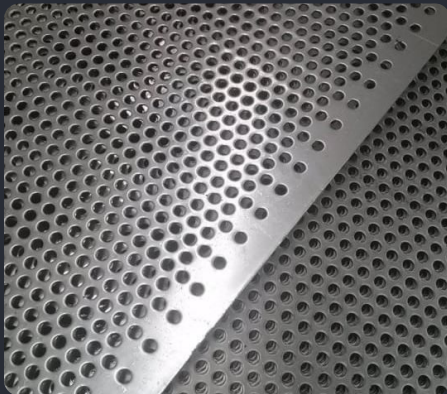


GAJANAND STEEL

FERROUS & NON-FERROUS METALS

World class engineering products.

Manufacturer & stockist of pipes, tubes, sheets, plates, coils, round bars, angles, flanges, pipe fittings and fasteners — Gurugram, Haryana.



Stockist & suppliers of

Stainless Steel · Alloy Steel · Mild Steel
Carbon Steel · Non-Ferrous Metals

+91 99539 72753 / +91 95115 48813

info@gajanandsteel.in



COMPANY PROFILE

A dependable source for industrial raw material.

We are **stockists and suppliers of stainless steel welded (ERW) and seamless pipes in 304, 304L, 316, 316L and other qualities** — the material required by your industry across project implementation, maintenance, modernisation, expansion and shutdown applications.

Gajanand Steel is a Gurugram-based manufacturer and stockist of ferrous and non-ferrous raw materials. We supply pipes and tubes, sheets, plates and coils, round bars, angles and flats, flanges, pipe fittings and fasteners to fabricators, contractors, manufacturers and project teams across the region.

We participate in the timely supply of raw material to our clients. When a line is down or a size is unavailable in the market, we work the problem with you — so the wheels of your industry keep moving and do not come to a grinding halt.

At Gajanand Steel, quality is never an accident. It is the outcome of high intention, sincere effort, intelligent direction and skilful execution — and it represents the wise choice among many alternatives. We match grade and finish to the application **before** the order is placed, so you avoid costly mistakes.

We aim to provide material at the **right price**, at the **right time**, at the **right quality** — together with clear market information and current trends, so you can take the right purchasing decision.



6

PRODUCT FAMILIES

5+

CORE SS GRADES

24h

QUOTE RESPONSE

1 pc

MINIMUM ORDER

Stock & supply

Core grades and sizes kept ready so your timeline does not wait on sourcing. Walk in with a requirement and walk out with a plan.

Custom sourcing

For non-standard sizes or specific grades we tap our supplier network to source exactly what the project calls for.

Dispatch support

Packing, loading and transport coordination handled with care so material arrives site-ready and on schedule.

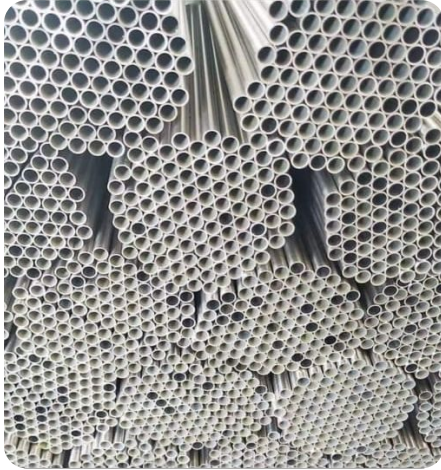
Project supply

From a single truck to phased delivery, we align dispatch dates with your site schedule for contractors, fabricators and infrastructure teams.



QUALITY POLICY

Material you can certify.



Our excellence

Quality is our prime concern. We maintain standards through committed people and a sound stocking operation, and we ensure that finished material meets the specification it was ordered against. Material test certificates are provided along with supply, so every consignment can be traced back to its heat number and chemistry.

Our facilities

Our Gurugram stock point holds core grades and sizes across pipes, sheets, bars, angles and fittings. We source to international standards and keep pace with market movement, so availability and pricing information you get from us reflects the market as it is today.

"Our philosophy is long-term, because the key to lasting success is building a long-term relationship with our clients."

Testing available

- Chemical analysis
- Physical testing
- Hardness testing
- Hydrostatic testing
- Pneumatic testing
- Stress corrosion testing
- Dimensional inspection
- Destructive — flattening
- Drift test
- Bend test
- NDT — eddy current
- Third-party inspection

Documentation

- Material Test Certificate (MTC) as per EN 10204 3.1
- Mill test certificate traceable to heat number
- IBR / Non-IBR certification where applicable
- Third-party inspection reports on request
- Packing list and dispatch documentation

STANDARDS WE SUPPLY AGAINST

ASTM ASME ANSI API MSS-SP DIN EN JIS BS IS UNS ISS BSS





Pipes & Tubes



STAINLESS STEEL

ASTM / ASME SA 312 GR, TP 304, 304L, 304H, 309S, 309H, 310S, 310H, 316, 316Ti, 316H, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L, ASTM / ASME SA 358 CL 1 % CL 3 GR. 304, 304L, 304H, 309S, 309H, 310S, 310H, 316, 316H, 321, 321H, 47.

DUPLEX STEEL

ASTM / ASME SA 790 UNS NO

CARBON STEEL

ASTM ASME A 53 GR. A & B, ASTM A 106 GR. A,B & C. API5L GR.B, API5L X 42, X46, X52, X60, X65 & X 70, ASTM / ASME A 691 GR A, B & C

ALLOY STEEL

ASTM / ASME A 335 GR P1, P5, P9, P11, P12, P22, P23, P91, ASTM / ASME A 691 GR 1 CR, 11/4 CR, 21/4CR.

NICKEL ALLOY

ASTM/ASME SB 163 UNS 2200 (NICKEL 200) ASTM/ASME SB 163 UNS 2201 (NICKEL 201) ASTM/ASME SB 163 / 165 UNS 4400 (MONEL 400) ASTM/ASME SB 464 UNS 8020 (ALLOY 20 / 20 CB 3) ASTM / ASME SB 704/705 UNS 8825 INCONEL(825)A ASTM / ASME SB 167 / 517 UNS 6600 (INCONEL 600) ASTM ASME SB 167 UNS 6601 (INCONEL 601) ASTM / ASME SB 704 / 705 UNS 6625 (INCONEL 625) ASTM / ASME SB 619/622/626 UNS 10276 (HASTELLOY C276)

COPPER ALLOY

ASTM / ASME SB 111 UNS NO. C 10100, 10200, 10300, 10800, 12000, 12200, 70600, 71500. ASTM / ASME SB 466 UNS NO. C 70600 (CU-NI-90/10), C 71500 (CU-NI-70/30) BR & NON-IBR

TYPES

Round, Square, Rectangular.

SIZE

Up to 24" NB. (Seamless), up to 48" (Welded)

WALL THICKNESS

Sch. 5S to Sch. XXS

SAW Pipes

Spiral Submerged Arc Welded pipes are available in API and other international standards, and also in commercial quality, for applications ranging from transportation of **oil, gas, water, slurry & sewage** to projects.

GRADE API5L Gr.B / ASTM A672/671/691

OUTSIDE DIA 16" to 200"

WALL THICKNESS 5 mm to 90 mm

LENGTH 4 metre to 12 metre

High quality SAW pipes in large diameters, i.e. in the range of 16" to 200" diameters, with IBR & Non-IBR.

Supply Conditions

FORM	Seamless, welded (ERW), EFW, SAW
ENDS	Plain, bevelled, threaded, socket
FINISH	Mill, pickled, bright annealed, polished (180 / 320 / 400 grit, mirror)
LENGTH	Single random, double random, cut to length
CERTIFICATION	MTC as per EN 10204 3.1, IBR on request

S S Heat Exchanger Tubes



SPECIFICATIONS

S. S. GRADE

ASTM A-213, A-268, A-269, A-789 — equivalent to ASME, EN, JIS etc.

CARBON STEEL

TP-304/304L, TP-304H, TP-316/316L, TP-316H, TP-316Ti, TP-317/317L, TP-321/321H, TP-347/347H, TP-405, TP-410, S31260, S31500, S31803, S32550, S32750, S32760.

ALLOY STEEL

ASTM A 179, ASTM A210, Gr. A1 & ASTM A 192 with IBR certificate

SIZE

ASTM A 213 Gr. T1, T2, T5, T11, T12, T22, T91 with IBR certificate

THICKNESS

6.00 mm OD to 101.6 mm OD

0.89 mm THK to 6.00 mm THK

Condenser & Heater Tubes

TYPE	OD heat exchanger / condenser tubes, straight or U-bent
OD	5/8" to 2" (15.88 to 50.8 mm)
WALL THICKNESS	0.5 to 4.0 mm
LENGTH	Up to 30 mtrs; U-tubes as per customers' requirements
SPECIFICATION	ASTM A249, A269, DIN 17455 & 17457
WELDING METHOD	TIG / laser welding used
OTHER	In bright annealed condition. Finish BA; polishing done on request.



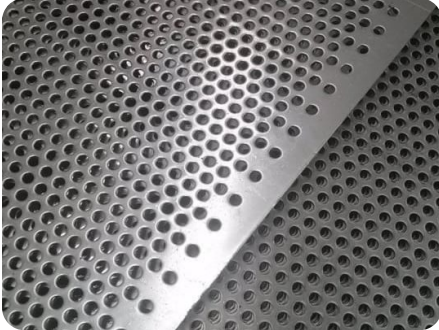
Angles, Flats & Sections

GRADES	SS 202, 304, 304L, 316, 316L; MS as per IS 2062	CHANNELS	Standard and custom sections
ANGLES	Equal & unequal, 20×20 mm to 100×100 mm	SQUARES / HEX	6 mm to 100 mm
FLATS	12 mm to 150 mm width, 3 mm to 25 mm thick	FINISH	Hot rolled, cold drawn, bright, polished





Sheets, Plates & Coils



S.S. SHEETS & PLATES

as per ASTM A240, Gr. TP 304, 304L, 304LN, 309, 309S, 309H, 310H, 316, 316L, 316H, 316LN, 316Ti, 317, 317L, 321, 321H, 347, 348, 3487H, 409, 410, 420, 430 etc.

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.

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, ASTM A 515 Gr.70

ABRASION RESISTANT / WEAR RESISTANT PLATES

Sailhard, Hardox, Sumihard, Jee Raex, Fora, Abrazo, Abrex, Xar, Nicrodur, Dillidur 360, 400, 450, 500, 600, 700, 900 & 100 BHN.

Rods, Bars & Wires

HIGH NICKEL ALLOY

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

MATERIAL GRADE

Stainless Steel, Nickel Alloys, Carbon Steel, Alloy Steel, IBR Non-IBR.

TYPES

Rods, Hex, Square, Wires, Billets etc.



Copper / Brass / Aluminium

Coils, sheets, plates, flats, pipes, rods

COPPER

DHP Copper, ETP Copper, DPA Copper, OFHC Copper tubes 2 mm OD to 200 mm OD with wall thickness of 0.10 mm to 15 mm.

BRASS

63/37 Brass, 70/30 Brass, Admiralty Brass, Aluminium & other composition of brass

CUPRONICKEL

95/5 Alloy & 70/30 Alloy

BRONZE

Phosphorous Bronze A B1/ A B2, Aluminium Bronze & Gun Metal

IS GRADES (ALUMINIUM)

19501, 19500, 19600, 19800, 19000, 24345, 24354, 31000, 43000, 46000, 51000, 52000, 53000, 54300, 55000, 65032, 63400, 644300, 62400, 63401, 74530 etc. Available in all sizes & thickness.

Buttweld 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/ MSS-SP-75 WPHY 42/46/52/56/60/65/70/A53GR. B/A106 GR.B / ASM 192 / A179 etc.
ALLOY STEEL	ASTM A234 WP1/ WP5/ WP9/ WP11/ WP22/WP91 etc.
OTHERS	Monel, Nickel, Inconel, Hastalloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead, etc.
SIZE	1/4" NB to 32" NB (seamless & welded)
WALL THICKNESS	Sch. 5S to Sch. XXS
TYPES	Tee, elbow, reducing tee, coupling, long & short stub bend, reducer, return bends, plug and union, cap, collar, cross, etc.

Socketweld & Threaded

MATERIAL GRADE	Stainless Steel, Nickel Alloys, Carbon Steel, Alloy Steel.
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/A 350 LF3 / A350 LF2
ALLOY STEEL	ASTM A182 F1/ F5/ F9/ F11/ F22/ F91 etc.
TYPES	Elbow, tee, union, cross, coup 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, etc.
SIZE	1/4" NB to 4" NB (socketweld & threaded)
CLASS	3000#, 6000#, 9000#
PRESSURE	1000#, 2000#, 3000#, 6000#, 9000#

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 Lf3/A350 LF2, etc.
ALLOY STEEL	ASTM A182 F1/ F5/ F9/ F11/ F22/ F91 etc.
TYPES	PN, plate blank flanges, screwed bars, spectacle, blind, lapped, reducing, welded socketweld, SORF, threaded, weldneck, slipon, socket weld, lap joint, spectacles, ring joint, orifice, long weldneck, deck flange, RTJ flange
SIZE	1/2" NB to 24" NB
CLASS	150#, 300#, 400#, 600#, 900#, 1500# & 2500#



Industrial & Instrumentation Items

Pipe / hydraulic clamp

- PP / Aluminium / hydraulic clamps
- Light series pipe clamps
- Heavy series pipe clamps
- Twin series pipe clamps

CLAMP MAT. Polymer & aluminium clamp bodies

BODY MAT. Steel plates & bolts

Solenoid valve / pneumatic cylinder

SOLENOID 4V series, 3V series, 2W series, 4F series foot valve, JMJ series mechanical valve, HV hand valve, etc.

CYLINDER SC series, MAL/MA mini series, DNC standard series, etc.

Syphon, thermowells & snubber

SYPHON TYPE U & O type syphon

THERMOWELLS Threaded, flanged, socket weld thermowells. Raised face, flat face and ring joint

SNUBBER VALVES Pulsation damper

Quick release coupling

- Pressure rating: up to 3500
- Temperature rating: up to 200 °C
- Lining: rubber, PTFE, nylon, etc.
- Various series: NY, YNL, QC, KS, Camlock
- Material: stainless steel, brass, MS, etc.
- Sizes: 1/8 to 4 in.

Condensate pot / sampling cylinder

- Heavy wall end connection
- All cylinders hydrostatically proof tested
- Material: stainless steel, brass, MS, etc.
- End connection: BSP / NPT / as per req.
- Sizes: 1/8 to 4 in.

Hydraulic hose & assembly

- Application: pneumatic / hydraulic systems, chemicals, steam & water
- Lining: rubber, PTFE, nylon, etc.
- Cover: braided, corrugated, plain, etc.
- End connection sizes 1/4" to 12"
- Standard and custom-length assemblies

Ports & outlets — sampling cylinder

PORTS Size — 1/4" / 1/2"

NO. OF PORTS 6 / 8 / 10 / 12 / 16 / 20 way

MATERIAL Stainless steel, carbon steel, etc.

END CONNECTION

OUTLET

SIZES

BSP / NPT / as per req.

Ball valve, needle valve, plug, nipple, etc.

1/8 to 2 in.





Non-Ferrous Metals



COPPER

DHP Copper, ETP Copper, DPA Copper, OFHC Copper

BRASS

63/37 Brass, 70/30 Brass, Admiralty 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, Rods, Strips & Wires

TUBES

2 mm OD to 200 mm OD with wall thickness of 0.10 mm to 15 mm in length up to 10 mtrs straight (in coils up to 25 mtrs) in Copper, Brass & Cupronickel.

RODS

In all sizes up to 160 mm diameter in Copper, Brass and Bronzes.

STRIPS / PROFILES

Copper strips and sections as per clients' specific requirements.

WIRES

Copper wires up to 42 SWG in bright annealed condition.

S. E. WIRES

Super enamelled copper wires up to 42 SWG.

Specifications

Indian Standard Specification (ISS)

British Standard Specification (BSS)

American Standard for Testing of Material (ASTM)

As per parties' specific specification

TESTING FACILITIES

- Chemical analysis
- Physical testing
- Hardness testing
- Hydrostatic testing
- Pneumatic testing
- Stress corrosion testing
- Dimensional inspection
- Destructive testing — flattening
- Drift test
- Bend test etc.
- NDT — eddy current testing





Dairy Equipment

Sight glass

Cross clamp end

3-way ball valve

Butterfly valve

IDF union

Wye loop

Conical strainer

Pipe holder



We offer a comprehensive range of superior quality dairy fittings in which the finest material is used. We have carved out a niche for ourselves as dairy-steel providers at reasonable prices.

This line consists of tri-clover parts with either tri-weld ends suitable for use with orbital welding equipment, or self-aligning tri-clamp end connections.

**SMS, IDF, DIN
UNIONS**

Size : 1/2" OD to 4" OD · Thickness : 10 swg to 22 swg

Dairy Butt Weld Fittings

MATERIAL OF CONSTRUCTION

304, 304L, 316, 316L etc.

FINISH

Mechanical polish as well as electropolish finishes.

TYPES

Seamless & welded

ITEMS

Threaded bevel seat 90 elbow, 90 reducing elbow, non-tapered 90 elbow, plain bevel seat 90 elbow, short outlet tee, 45 elbow, equal tee, reducing tee, instrument tee, short outlet reducing tee, equal cross, long weld ferrule, short welded ferrule, ferrule for expanding (recessless).





Ferrule Fitting / Tube Fitting

Instrumentation tube fittings in stainless steel, brass and carbon steel — double-ferrule compression design, available across the full range of unions, adapters, tees, connectors, couplings and closures.

Union

- Bulkhead union
- Reducing union
- Union
- Union cross
- Union elbow
- Male elbow
- Female elbow

Adapter

- O-seal pipe
- O-seal straight
- Male adapter
- Male/female ISO tapered
- Male/female ISO parallel
- Female adapter

Tee

- Male branch tee
- Male run tee
- Female branch tee
- Union tee
- Female run tee

Coupling & nipple

- Hex coupling
- Hex reducing coupling
- Hex nipple
- Pipe cap
- NPT male/female ISO parallel
- NPT male/female ISO tapered

Ferrule & closure

- Back ferrule
- Front ferrule
- Parker ferrule
- Coupling cap / nut
- Fitting end closure
- Tube end closure

Connector

- Male connector
- Female connector
- O-seal pipe thread connector
- O-seal straight thread connector
- Plug & reducer

Manifolds & valves

MANIFOLDS	2-valve, 3-valve, 5-valve manifolds
MATERIAL	SS 316, SS 304, Monel, Hastelloy, brass, carbon steel
SIZES	1/8" to 2" tube OD / NPT

PRESSURE	Up to 6000 psi depending on size and material
END CONNECTIONS	NPT, BSP, BSPT, ISO parallel / tapered, tube
CERTIFICATION	MTC 3.1 on request



Long Radius Bend



RADIUS
ANGLE
SIZE
THICKNESS
MATERIAL
DIMENSIONS STD.

Long radius bends from 2D, 3D, 5D, 10D, 12D to 22D radius.

From 15 deg to 360 deg.

From 2" to 24"

From 5 mm to 40 mm.

Titanium, Inconel, Monel, Cupro Nickel, Duplex, Carbon Steel, Stainless Steel, Alloy Steel, LTCS & other exotic materials.

ASME / ANSI B16, MSS SP-44, DIN etc.

Valves

Globe valve — BS 5352 / BS 6755 / BS 1873 / ASME B 16.34 / DIN 3356

SS (BAR STOCK)	Rating 150# / 300# · Size 8 mm to 100 mm
CAST CS / SS / AS	Rating 125# / 150# · Size 25 mm to 600 mm
FORGED CS / SS	Rating 150# / 300# / 1500# · Size 15 mm to 50 mm
CAST IRON	Rating 150# / 300# / 600# / 900# · Size 15 mm to 400 mm

Non-return valve — BS 6755 / BS 1868 / ASME B 16.34 / API 6D

SS (BAR STOCK)	Rating 150# / 300# · Size 8 mm to 100 mm
CAST IRON	Rating 125# / 150# · Size 25 mm to 400 mm
FORGED CS / SS	Rating 150# / 300# / 800# / 1500# · Size 15 mm to 50 mm
CAST CS / SS / AS	Rating 150# / 300# / 600# / 900# · Size 15 mm to 600 mm

Butterfly valve — API 609 / BS 5155 / IS 13095

CAST C. STEEL	Sureseal / replaceable rubber lining · Water type · 40 mm to 500 mm · Offset disc, lever / gear (IS marked) · Double flanged / lugged, 350 mm to 1200 mm
CAST IRON	Sureseal / replaceable rubber lining · Water type · 40 mm to 300 mm
STAINLESS STEEL	Offset disc · Lever / manual gear / motorised gear · Water type · 40 mm to 300 mm

Gate valve — BS 1414 / BS 5352 / API 600 / API 602 / API 6D / ASME B 16.34 / API 598

SS (BAR STOCK)	Rating 150# / 300# · Size 8 mm to 100 mm
CAST IRON	Rating 125# / 150# · Size 25 mm to 600 mm
FORGED CS / SS	Rating 150# / 300# / 800# / 1500# · Size 15 mm to 50 mm
CAST CS / SS / AS	Rating 150# / 300# / 600# / 900# · Size 15 mm to 600 mm

Strainer

CAST CARBON STEEL	Design Y type (PN 40 / DIN 3356 / BS 1873) · Size 15 mm to 80 mm
SS (BAR STOCK)	Design Y type (150#) · Ends screwed / socket weld · Size 15 mm to 80 mm
CAST IRON	Y type (150#) screwed / flanged, 15 mm to 300 mm; T type (dirt box) flanged, 40 mm to 300 mm; pot type flanged, 25 mm to 300 mm

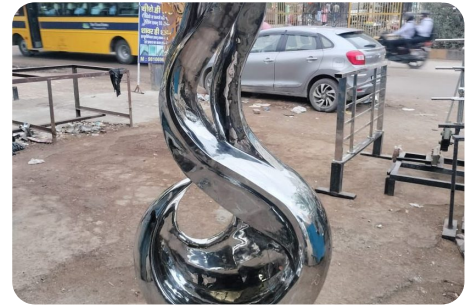
Also available

- 1 Check valve
- 2 Plug valve
- 3 Needle valve
- 4 Safety relief valve
- 5 Sluice valve
- 6 Pressure reducing valve



Fabrication & Finished Work

Beyond raw material, we supply and support finished architectural and decorative metalwork — gates, railings, staircases, partitions, screens, facades and custom pieces in stainless steel with PVD, mirror, brushed and powder-coated finishes.



Processes

- Laser cutting & CNC profile cutting
- Bending, rolling & press braking
- TIG / MIG welding & weld finishing
- Buffing, grinding & hand polishing
- Assembly, installation & site fitting

Finishes

Mirror (8K)

Brushed / hairline

Satin

Bead blast

PVD gold

PVD rose gold

PVD black

Powder coated

Etched

Embossed



Mild Steel Pipes conforming to IS : 1239 (Part 1) – 1979

Nominal Bore		Outside Diameter		Light		Medium		Heavy	
Inch	In mm	In	mm	Thk mm	kg/mtr	Thk mm	Kg/Mtr.	Thk 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 conforming 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, –10 percent

Maximum permissible pressure and temperature for tubes with steel couplings or screwed and socketed joints

Nominal Bore	Max. permissible pressure N/mm ²	Kg./cm ²	Max. permissible temperature °C
Up to and including 25 mm	1.20	12.24	260
Over 25 mm up to and including 40 mm	0.98	9.99	260
Over 40 mm up to and including 80 mm	0.86	8.77	260
Over 80 mm up to and including 100 mm	0.58	7.04	260
Over 100 mm up to and including 125 mm	0.69	7.04	171
Over 125 mm up to and including 150 mm	0.50	5.10	160



Stainless Steel Pipe Dimension as per ASTM and Weight Kg. per Mtr. (ANSI B 36.19 – 1965)

Nominal Bore		Outside Diameter mm	Schedule 5S		Schedule 10S		Schedule 20S		Schedule 40S		Schedule 80S		Schedule 160S		Schedule XXS	
mm	Inch		Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)
3	1/8	10.3	1.24	0.276	1.24	0.28	1.5	0.33	1.73	0.37	2.41	0.47	–	–	–	–
6	1/4	13.7	1.24	0.390	1.65	0.49	2.00	0.58	2.24	0.631	3.02	0.80	–	–	–	–
10	3/8	17.1	1.24	0.490	1.65	0.63	2.00	0.74	2.31	0.845	3.20	1.10	–	–	–	–
15	1/2	21.3	1.65	0.800	2.11	1.00	2.30	1.07	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	2.55	1.52	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	2.55	1.94	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	3.00	2.90	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	3.00	3.55	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	3.00	4.24	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	4.00	6.81	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	4.00	8.37	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	4.50	12.18	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	5.00	16.80	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	6.35	25.36	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	6.35	33.31	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	6.35	41.77	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	6.35	49.7	9.52	73.88	12.7	132.0	33.32	238.76	25.40	186.97
350	14	355.6	3.96	34.36	4.78	41.3	7.92	67.80	11.13	94.59	19.05	158.08	35.71	281.70	–	–
400	16	406.4	4.19	41.56	4.78	47.29	7.92	77.83	12.7	123.30	21.41	203.33	40.46	365.11	–	–
450	18	457.2	4.19	46.80	4.78	53.42	7.92	87.71	14.27	155.80	23.8	254.36	45.71	466.40	–	–
500	20	508.0	4.78	59.25	5.54	68.71	9.53	117.14	15.09	183.42	26.19	311.2	49.99	564.68	–	–
600	24	609.6	5.54	82.47	6.35	94.45	9.53	141.12	17.48	255.41	30.96	442.08	59.54	808.22	–	–

All dimensions in millimetres. Weights are nominal and for guidance only — confirm against the mill test certificate for the specific heat supplied.





Dimensions of Butt-Welding Fitting ANSI B-16.9 / B-16.28

90° Elbow Long Radius

45° Elbow

90° Elbow Short Radius

180° Return Short Radius

180° Return Long Radius

Tee / Equal Tee

Caps

Stub-End

Nominal Pipe Size		Outside Diameter D	Center to Face				Back to Face			Center to Center			Length 'L'	
INCH	MM		A R=1.5D	B	C	N R=1D	E	F	G	R	M	S	Short L	Long L
1/2	15	21.3	38.00	16.0	25.0	–	25.0	48.0	–	76.0	–	35.0	50.8	76.2
3/4	20	26.7	29.00	11.0	29.0	–	25.0	43.0	–	57.0	–	43.0	50.8	76.2
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
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
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
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
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
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
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
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
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
6	150	168.3	229.0	95.0	143.0	152.0	89.0	313.0	237.0	457.0	305.0	218.0	88.9	203.2
8	200	219.1	305.0	127.0	178.0	203.0	102.0	414.0	313.0	610.0	406.0	270.0	101.6	203.2
10	250	273.1	381.0	159.0	216.0	254.0	127.0	515.0	391.0	762.0	508.0	324.0	127.0	254.0
12	300	323.8	457.0	190.0	254.0	305.0	152.0	619.0	467.0	914.0	610.0	381.0	152.4	254.0
14	350	355.6	533.0	222.0	279.0	356.0	165.0	711.0	533.0	1067.0	711.0	413.0	152.4	305.0
16	400	406.4	610.0	254.0	305.0	406.0	178.0	813.0	610.0	1219.0	813.0	470.0	152.4	305.0
18	450	457.2	686.0	286.0	343.0	457.0	203.0	914.0	686.0	1372.0	914.0	533.0	152.4	305.0
20	500	508.0	762.0	318.0	381.0	508.0	229.0	1016.0	762.0	1524.0	1016.0	584.0	152.4	305.0
22	550	559.0	838.0	343.0	419.0	559.0	254.0	1118.0	838.0	1676.0	1118.0	614.4	152.4	305.0
24	600	610.0	914.0	381.0	432.0	610.0	267.0	1219.0	914.0	1829.0	1219.0	692.0	152.4	305.0
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 are in millimetres.



ASTM A 193/A 193M Alloy Steel & Stainless Steel Bolting for High Temperature Service

ASTM Grade	Material	Dia. mm	Tensile Strength min. MPa	Yield Strength min. MPa	Elongation in 4D min. %	Reduction of Area min. %	Hardness max.
B7	AISI 4140/4142/4145	≤ 64	860	720	16	50	321 HBW
B7	AISI 4140/4142/4145	> 64 – 100	795	655	16	50	321 HBW
B7	AISI 4140/4142/4145	> 100 – 180	690	515	18	50	321 HBW
B7M	AISI 4140/4142/4145	≤ 100	690	550	18	50	235 HBW
B16	AISI 4140 + V	≤ 64	860	725	18	50	321 HBW
B16	AISI 4140 + V	> 64 – 100	760	655	17	45	321 HBW
B16	AISI 4140 + V	> 100 – 180	690	586	16	45	321 HBW
B8 Cl.1	AISI 304	All	515	205	30	50	223 HBW
B8 Cl.2	AISI 304 (strain hardened)	≤ 20	860	690	12	35	321 HBW
B8M Cl.1	AISI 316	All	515	205	30	50	223 HBW
B8M Cl.2	AISI 316 (strain hardened)	≤ 20	760	665	15	45	321 HBW
B8T	AISI 321	All	515	205	30	50	223 HBW
B8C	AISI 347	All	515	205	30	50	223 HBW

Class 2 values apply to the diameter ranges stated in ASTM A 193 Table 3; values reduce for larger diameters. Confirm against the mill certificate.

ASTM A 194 / A 194M Carbon Steel, Alloy Steel & Stainless Steel Nuts

Grade	Material	Hardness	Mating bolt
2H	Medium carbon, quenched & tempered	159–352 HBW	B7, B16
2HM	Medium carbon, quenched & tempered	159–235 HBW	B7M
4	Carbon–moly, quenched & tempered	212–352 HBW	B7, B16
7	AISI 4140, quenched & tempered	159–352 HBW	B7
8	AISI 304	126–300 HBW	B8
8M	AISI 316	126–300 HBW	B8M

Fastener range supplied

- Stud bolts, full-threaded studs, tie rods
- Hex bolts, hex head screws, foundation bolts
- Heavy hex nuts, hex nuts, lock nuts, dome nuts
- Plain washers, spring washers, taper washers
- Allen / socket head cap screws, grub screws
- Anchor fasteners, U-bolts, eye bolts, J-bolts

SIZES M3 to M100 · 1/8" to 4"

LENGTH 3 mm to 1000 mm and above

STANDARDS ASTM, ASME, DIN, ISO, IS, BS, JIS

FINISH Self colour, zinc plated, HDG, PTFE (Xylan), black oxide

Stainless steel fastener property classes (ISO 3506)

Class	Grade	Property class	Tensile strength min. MPa	Yield (0.2%) min. MPa	Elongation min. mm
A2	304 / 304L	70	700	450	0.4 d
A2	304 / 304L	80	800	600	0.3 d
A4	316 / 316L	70	700	450	0.4 d
A4	316 / 316L	80	800	600	0.3 d



Dimensions of Forged Flanges ANSI B 16.5

Slip-On Flange

Welding Neck Flange

Blind Flange

Threaded Flange

Lap Joint Flange

Socket Weld Flange

ASA 150 CLASS

Nominal Pipe Size		Flange Dia O	Dia of Bolt Circle A	Dia of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Lenght through Hub			Dia of Bore		Dia of R/F R	Depth of Socket F	Pipe Dia X
(MM)	(INCH.)							S/O & S/W Y	W/N Y	L/J Y	S/O & S/W B	L/J B			
15	1/2	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	3/4	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	1	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	1 1/4	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	1 1/2	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	2	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	2 1/2	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	3	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	4	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	5	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	6	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	8	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	10	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	12	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	14	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	16	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	18	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	20	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	24	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

All dimensions are in millimeters ● Flanges except Lap Joint will be furnished with (1.6 mm) Raised Face, which is included in Thickness (C) and Lenght through Hub (Y).

ASA 300 CLASS

Nominal Pipe Size		Flange Dia O	Dia of Bolt Circle A	Dia of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Lenght through Hub			Dia of Bore		Dia of R/F R	Depth of Socket F	Pipe Dia X
(MM)	(INCH.)							S/O & S/W Y	W/N Y	L/J Y	S/O & S/W B	L/J B			
15	1/2	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	3/4	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	1	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	1 1/4	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	1 1/2	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	2	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	2 1/2	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	3	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	4	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	5	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	6	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	8	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	10	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	12	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	14	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	16	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	18	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	20	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	24	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

All dimensions are in millimeters ● Flanges except Lap Joint will be furnished with (1.6 mm) Raised Face, which is included in Thickness (C) and Lenght through Hub (Y).



Dimensions of Forged Flanges ANSI B 16.5

ASA 600 CLASS

Nominal Pipe Size (MM)	Flange Dia O	Dia of Bolt Circle A	Dia of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Lenght through Hub			Dia of 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	144.5	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	277.4	323.8	–	273.05
300	558.8	488.9	34.9	20	66.7	400.0	92.1	155.6	117.3	327.1	328.2	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	462.3	533.4	–	457.20
500	812.8	723.9	44.4	24	88.9	609.9	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 (6.35 mm) Raised Face, which is not included in Thickness (C) and Lenght through Hub (Y).

ASA 900 CLASS

Nominal Pipe Size (MM)	Flange Dia O	Dia of Bolt Circle A	Dia of Bolt Holes D	No. of Holes	Thk of Flange C	Dia of Hub E	Lenght through Hub			Dia of 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	120.6	82.5	22.2	4	22.2	38.1	31.7	60.3	31.7	22.3	22.8	34.9	9.5	21.33
20	130.2	88.9	22.2	4	25.4	44.4	34.9	69.8	35.0	27.7	28.1	42.9	11.1	26.67
25	149.2	101.6	25.4	4	28.6	52.4	41.3	73.0	41.1	34.5	35.0	50.8	12.7	33.40
32	158.7	111.1	25.4	4	28.6	63.5	41.3	73.0	41.1	43.2	43.6	63.5	14.2	42.16
40	177.8	123.8	28.6	4	31.8	69.8	44.4	82.5	44.4	49.5	50.0	73.0	15.8	48.26
50	215.9	165.1	25.4	8	38.1	104.8	57.1	101.6	57.1	62.0	62.4	92.1	17.4	60.31
65	244.5	190.5	28.6	8	41.3	123.8	63.5	104.8	63.5	74.7	75.4	104.8	19.0	73.02
80	241.3	190.5	25.4	8	38.1	127.0	53.9	101.6	53.8	90.7	91.4	127.0	–	88.90
100	292.1	234.9	31.7	8	44.4	158.7	69.8	114.3	69.8	116.0	116.8	157.2	–	114.30
125	349.2	279.4	35.0	8	50.8	190.5	79.3	127.0	79.2	143.7	144.5	185.7	–	141.30
150	381.0	317.5	31.7	12	55.6	234.9	85.8	139.7	85.8	170.6	171.4	215.9	–	168.27
200	469.9	393.7	38.1	12	63.5	298.4	101.6	162.0	114.3	221.4	222.2	269.9	–	219.07
250	546.1	469.9	38.1	16	69.8	368.3	107.9	184.1	127.0	276.3	277.3	323.8	–	273.05
300	609.6	533.4	38.1	20	79.3	419.1	117.4	200.0	142.7	327.1	328.1	381.0	–	323.85

All dimensions are in millimeters ● Flanges except Lap Joint will be furnished with (6.35 mm) Raised Face, which is not included in Thickness (C) and Lenght through Hub (Y). Class 1500# & 2500# flanges are available as per customer requirement.



Summary of the Main ASTM Standards Generally Used for Sheets / Plates

ASTM / UNS	Grade	Chemical requirements (percent)						Mechanical requirements		
		C max	Cr	Ni	Mo	Mn max	Other	Tensile min. MPa	Yield min. MPa	Elong. min. %
A240 / S20200	202	0.15	17.0–19.0	4.00–6.00	–	10.00	N 0.25	515	275	40
A240 / S30400	304	0.08	18.0–20.0	8.0–10.5	–	2.00	–	515	205	40
A240 / S30403	304L	0.030	18.0–20.0	8.0–12.0	–	2.00	–	485	170	40
A240 / S30409	304H	0.04–0.10	18.0–20.0	8.0–10.5	–	2.00	–	515	205	40
A240 / S30908	309S	0.08	22.0–24.0	12.0–15.0	–	2.00	–	515	205	40
A240 / S31008	310S	0.08	24.0–26.0	19.0–22.0	–	2.00	–	515	205	40
A240 / S31600	316	0.08	16.0–18.0	10.0–14.0	2.00–3.00	2.00	–	515	205	40
A240 / S31603	316L	0.030	16.0–18.0	10.0–14.0	2.00–3.00	2.00	–	485	170	40
A240 / S31635	316Ti	0.08	16.0–18.0	10.0–14.0	2.00–3.00	2.00	Ti 5×C min	515	205	40
A240 / S31700	317	0.08	18.0–20.0	11.0–15.0	3.0–4.0	2.00	–	515	205	35
A240 / S31703	317L	0.030	18.0–20.0	11.0–15.0	3.0–4.0	2.00	–	515	205	40
A240 / S32100	321	0.08	17.0–19.0	9.0–12.0	–	2.00	Ti 5×(C+N) min	515	205	40
A240 / S34700	347	0.08	17.0–19.0	9.0–13.0	–	2.00	Nb 10×C min	515	205	40
A240 / N08904	904L	0.020	19.0–23.0	23.0–28.0	4.0–5.0	2.00	Cu 1.00–2.00	490	215	35
A240 / S40900	409	0.03	10.5–11.7	0.50 max	–	1.00	Ti 6×C min	380	205	20
A240 / S41000	410	0.08–0.15	11.5–13.5	0.75 max	–	1.00	–	450	205	20
A240 / S43000	430	0.12	16.0–18.0	0.75 max	–	1.00	–	450	205	22
A240 / S31803	Duplex 2205	0.030	21.0–23.0	4.5–6.5	2.5–3.5	2.00	N 0.08–0.20	620	450	25
A240 / S32750	Super Duplex 2507	0.030	24.0–26.0	6.0–8.0	3.0–5.0	1.20	N 0.24–0.32	795	550	15

Carbon steel & boiler quality plates

Standard	Grade	Application	Tensile MPa	Yield min. MPa	Elong. min. %
IS 2062	E250 Gr. A / B / C	General structural purposes	410 min	250	23
ASTM A36	A36	General structural	400–550	250	20
IS 2002	Gr. 1 & 2	Steel plates for boilers	360–480	200	25
ASTM A515	Gr. 70	Intermediate/higher temp. service	485–620	260	17
ASTM A516	Gr. 60	Moderate/lower temp. service	415–550	220	21
ASTM A516	Gr. 70	Moderate/lower temp. service	485–620	260	17
ASTM A387	Gr. 11 / 12 / 22 Cl. 1 & 2	Cr–Mo pressure vessel	415–655	240–310	18–22
ASTM A204	Gr. A & B	Molybdenum alloy pressure vessel	450–585	255	19

Values are indicative and follow the current editions of the referenced standards. Actual chemistry and mechanical properties for a supplied heat are stated on the mill test certificate accompanying the material.



Dimensions of Socket-Welding Fittings ANSI B 16.11

Cap

Half Coupling

Coupling

Tee

Cross

90° Elbow

45° Elbow

Nominal Pipe Size		Socket Bore dia. A		Inside dia. of fitting B		Socket Depth C		Bore dia. of body D		Min. wall thickness Class 3000		Min. wall thickness Class 6000	
MM	INCH	max	min	max	min	max	min	max	min	Body	Socket	Body	Socket
15	1/2	22.2	21.8	16.6	15.0	12.5	11.0	7.2	5.6	4.67	4.09	5.97	5.18
20	3/4	27.6	27.2	21.7	20.2	16.3	14.8	11.8	10.3	4.90	4.27	6.96	6.04
25	1	34.3	33.9	27.4	25.9	21.5	19.9	16.0	14.4	5.69	4.98	7.92	6.93
32	1 1/4	43.1	42.7	35.8	34.3	30.2	28.7	23.5	22.0	6.07	5.28	7.92	6.93
40	1 1/2	49.2	48.8	41.6	40.1	34.7	33.2	28.7	27.2	6.35	5.54	8.92	7.80
50	2	61.7	61.2	53.3	51.7	43.6	42.1	38.9	37.4	6.93	6.04	10.92	9.50
65	2 1/2	74.4	73.9	64.2	61.2	...	...	...	...	8.76	7.67	...	...
80	3	90.3	89.8	79.4	76.4	...	...	...	...	9.52	8.30	...	...
100	4	115.7	115.2	103.8	100.7	...	...	...	...	10.69	9.35	...	...

(1) All dimensions are in millimeters.

(2) Upper and lower values for each size are the respective maximum and minimum dimensions.

(3) Average of socket wall thickness around periphery shall be no less than listed values. The minimum values are permitted in localized areas.

Centre-to-end dimensions — socket weld fittings

Nominal Pipe Size	90° Elbow A	45° Elbow C	Tee A	Cross A	Coupling length	Half coupling length	Cap height
1/2"	15.5	11.0	15.5	15.5	25.5	19.5	22.5
3/4"	19.0	13.0	19.0	19.0	28.5	22.5	24.0
1"	22.5	14.0	20.5	20.5	32.0	27.0	28.5
1 1/4"	27.0	17.5	22.5	22.5	35.0	32.0	30.0
1 1/2"	32.0	20.5	25.5	25.5	38.0	38.0	32.0
2"	38.0	25.5	28.5	28.5	54.0	41.0	41.0
2 1/2"	41.0	28.5	...	...	...	...	43.0
3"	57.0	32.0	...	...	...	...	44.5
4"	66.5	41.0	...	...	...	...	48.0

Classes supplied

Socket weld and threaded fittings are supplied in Class 3000#, 6000# and 9000# in stainless steel, carbon steel and alloy steel to ASTM A182, A105 and A350 respectively.

Threaded fittings — ANSI B16.11

Threads to ASME B1.20.1 (NPT). Available in Class 2000#, 3000# and 6000#, sizes 1/8" NB to 4" NB. Other thread forms (BSP, BSPT, ISO) to order.



Formulae

- 1 **Weight of stainless steel pipes & tubes** — $(OD \text{ (mm)} - W.T. \text{ (mm)}) \times W.T. \text{ (mm)} \times 0.02466 = \text{Kg. per Mtr.}$
- 2 **Weight of stainless steel sheets** — $(\text{Length (mtr.)} \times \text{Width (mtr.)} \times \text{Thk (mm)}) \times 8 = \text{Kg per Sheet}$
- 3 **Weight of stainless steel circle & blanks** — $(O.D. \text{ (mm)} \times O.D. \text{ (mm)} \times \text{Thk (mm)}) / 160 / 1000 = \text{Kg per Pcs.}$
- 4 **Weight of stainless steel rounds** — $(Dia. \text{ (mm)} \times Dia. \text{ (mm)}) \times 0.00623 = \text{Per Mtr.}$
- 5 **Weight of stainless steel hexagonal rods** — $(Dia. \text{ (mm)} \times Dia. \text{ (mm)}) \times 0.00679 = \text{Per Mtr.}$
- 6 **Weight of stainless steel square bars** — $(Dia. \text{ (mm)} \times Dia. \text{ (mm)}) \times 0.00787 = \text{Kg Per Mtr.}$
- 7 **Weight of carbon steel pipes & tubes** — $(O.D. \text{ (mm)} - W.T. \text{ (mm)}) \times W.T. \text{ (mm)} \times 0.02466 = \text{Kg. Per Mtr.}$
- 8 **Weight of carbon steel sheets – plates** — $(\text{Length (mtr.)} \times \text{Width (mtr.)} \times \text{Thk (mm)}) \times 7.85 = \text{Kg. Per Sheet}$
- 9 **Weight of copper pipes** — $(O.D. \text{ (mm)} - W.T. \text{ (mm)}) \times W.T. \text{ (mm)} \times 0.0256 = \text{Kg. Per Mtr.}$
- 10 **Weight of lead pipes (approx.)** — $(O.D. \text{ (mm)} - W.T. \text{ (mm)}) \times W.T. \text{ (mm)} \times 0.0345 = \text{Per Mtr.}$
- 11 **Weight of lead sheets (approx.)** — $(\text{Length (mtr.)} \times \text{Width (mtr.)} \times \text{Thk (mm)}) \times 11.2 = \text{Kg. Per Sheet}$
- 12 **Weight of aluminium pipes (approx.)** — $(O.D. \text{ (mm)} - W.T. \text{ (mm)}) \times W.T. \text{ (mm)} \times 0.0082 = \text{Kg. Per Mtr.}$
- 13 **Weight of aluminium sheets (approx.)** — $(\text{Length (mtr.)} \times \text{Width (mtr.)} \times \text{Thk (mm)}) \times 2.66 = \text{Kg Per Sheet}$
- 14 **Making of pipe from sheet or plate** — $(OD - \text{Thickness}) \times 3.14 = \text{Width of Sheet or Plate}$

1 Feet = 0.3048 Meter / 304.8 mm

1 Meter = 3.2808 Feet

1 Inch = 25.4 mm

1 Pound = 6.544 (0.45359243 Kg)

Gauge Chart

Gauge	Inch	MM	Gauge	Inch	MM	Gauge	Inch	MM
0	0.324	8.229	14	0.080	2.032	28	0.0148	0.375
1	0.300	7.620	15	0.072	1.828	29	0.0136	0.345
2	0.276	7.010	16	0.064	1.625	30	0.0124	0.314
3	0.252	6.400	17	0.056	1.422	31	0.0116	0.294
4	0.232	5.892	18	0.048	1.219	32	0.0106	0.274
5	0.212	5.384	19	0.040	1.016	33	0.0100	0.254
6	0.192	4.876	20	0.036	0.914	34	0.0092	0.233
7	0.176	4.470	21	0.032	0.812	35	0.0084	0.213
8	0.160	4.064	22	0.028	0.711	36	0.0076	0.193
9	0.144	3.657	23	0.024	0.609	37	0.0068	0.172
10	0.128	3.151	24	0.022	0.558	38	0.0060	0.152
11	0.116	2.946	25	0.020	0.508	39	0.0052	0.132
12	0.104	2.641	26	0.018	0.457	40	0.0048	0.121
13	0.092	2.336	27	0.0164	0.416	41	0.0044	0.111



Application Industries

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Hygienic piping, tanks, dairy-grade fittings and electropolished tube.

Food & beverage

Food-grade 304 / 316 tube, fittings and sheet for processing lines.

Chemical & fertilizers

Corrosion-resistant grades, duplex and high-nickel alloys.

Cement

Wear-resistant plate, structural sections and heavy fabrication material.

Automobile

Bright bars, tubes, sheet and fasteners for component manufacture.

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316 / 316L and cupronickel for exterior and seawater service.

Construction

Angles, flats, MS and ERW pipe, railings, facades and structural steel.

Refinery plants

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Oil & gas

API 5L line pipe, SAW pipe, weldneck flanges and butt weld fittings.

Engineering

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Bulk and phased project supply aligned to site schedules.

THIRD PARTY INSPECTION

Material can be offered for inspection to a nominated third-party agency prior to dispatch. Inspection release notes and stage-inspection reports are issued along with the mill test certificate where the order calls for it.

Client inspection

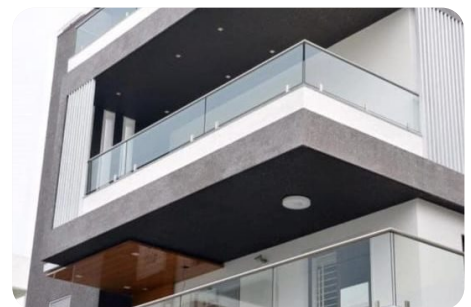
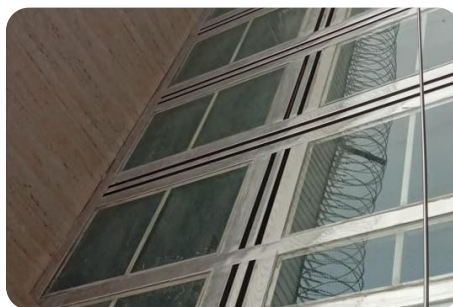
TPI agency

Stage inspection

Final inspection

Release note

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TELEPHONE

+91 99539 72753
+91 95115 48813

EMAIL & WEB

info@gajanandsteel.in
www.gajanandsteel.in

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