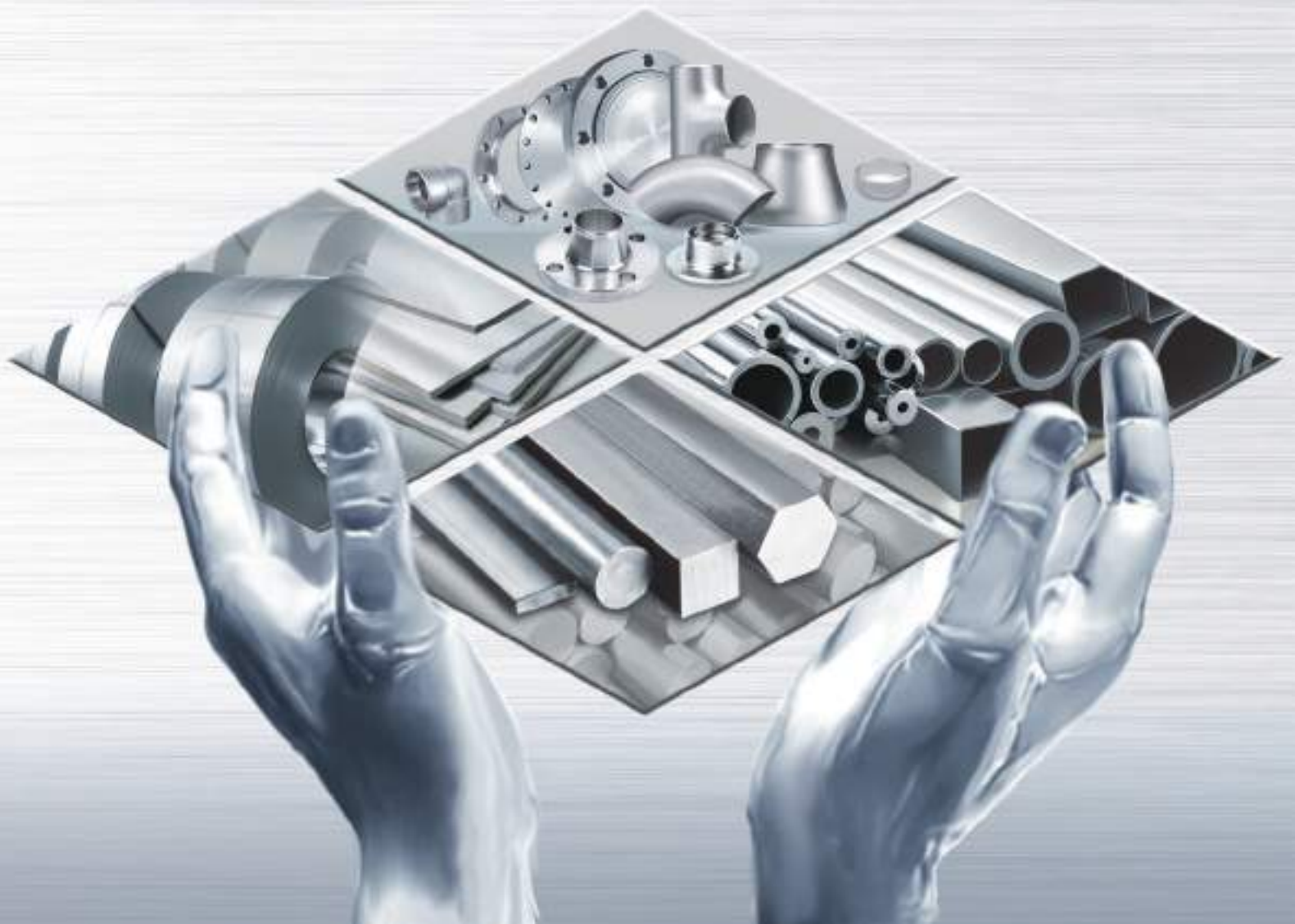




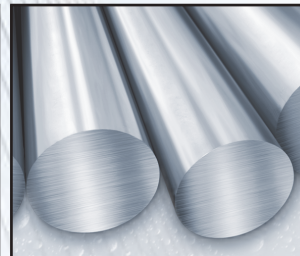
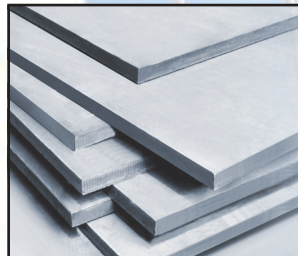
Unisteel & Engineering Co. (P) Ltd.

(An ISO 9001 : 2015 Certified Company)

Duplex steel



Reaching High





Company Profile

Since 1975, making “Stainless Steel Plate & Piping Products” has been and remains our Prime business. **Unisteel & Engineering Co. Pvt. Ltd.** is a force to reckon with in the field of Importing, Exporting, Stockholding & supplying of Stainless Steel, Duplex Steel, Carbon Steel & High Nickel Alloys in all Shapes of Sheets, Plates, Pipes, Round Bar, Pipe Fittings, Flanges, etc. We are a leading company in sales of ready-at-stock of Stainless Steel & Duplex Steel plates and Pipes.

Stocking the largest and one of the most extensive single-site stainless plate & Piping inventories in India, we are the industry heavy weight. With over 1000 Tons of Stainless Steel, Duplex Steel (2205 / 31803 / 1.4462) & Super Duplex Steel (2507) & other Alloys we can satisfy your most demanding and hard-to-find requirements.

UNISTEEL is in a position to distribute its products both on the National market as well as in International Market & specializing in supporting clients in various industries with fast track deliveries of material in any dimension, grade or certification level.

Quality Policy



Quality Policy

Unisteel and Engineering Company Pvt. Ltd. is committed to provide products and services that meet or exceed customer's requirements by maintaining a management system compliant with ISO 9001. We accomplish this by fostering commitment, training and excellence in our people and continual improvement in our products and processes.

Our quality policy revolves around our relentless mission of enhancing customer satisfaction. We hold ourselves to delivering non-stop improvement and providing the highest quality products and services. We achieve these goals by giving all employees ownership for the quality of the products or services they provide.

Company's priority objectives are customer satisfaction, on-time delivery and waste reduction. Objectives of quality management system are communicated to the entire supply chain and the effectiveness is monitored by senior management reporting systems.

For Unisteel & Engineering Co. Pvt. Ltd.

Mr. Aditya Shah
Director.

Products Overview

We carry the following stock, all of which is fully traceable in order to maintain our high quality standards.

STAINLESS STEEL :-

AISI 304, 304L, 304H, 316, 316L, 316Ti, 317L, 321, 309S, 310S, 310H, 253MA (S30815), 409M, 410S, 430.

DUPLEX STEEL :-

DUPLEX STEEL - 31803 / 1.4462 / 32205, SUPER DUPLEX 2507 / 32750 / 32760. LEAN DUPLEX STEEL 2304 & LDX 32101

ALLOY STEEL PIPE :-

ASTM, A 106 Gr.B, A335, GR.P-11, P-22, P-9, IN SIZE 1/2" To 24" Sch. 40, 80, 120, 160, XXS. With IBR MTC

BOILER & STEEL PLATES :-

ASTM A516 Gr. 70 & ASTM A387 Gr. 11 & 12 CLASS I & II. ALLOYS HARDOX, WELDOX, WELTEN, 690QL, CORTEN STEEL, SAIL HARD, S355, 16Mo3.

VIRGIN MATERIALS :-

17-4 Ph, SMO-254, 904L, MONEL, NICKEL, INCONEL, TITANIUM & HASTALLOY

MANUFACTURERS OF :-

PIPES, PIPE FITTINGS & FLANGES - 1/2" To 48" NB

SPECIALIST IN :-

SS 310S & DUPLEX STEEL 2205 / 1.4462 / 31803 & SUPER DUPLEX 2507 SHEETS, PLATES, ROD, CIRCLE, PIPES, PIPE FITTINGS & FLANGES

SHEETS, PLATES, PIPES, TUBES, PIPE FITTINGS, BUSH, FORGED FITTINGS, INSTRUMENTATIONS FITTINGS, RODS, PROFILE CUTS, STRIPS, WIRE ROD, WIRE MESH, PERFORATED SHEETS, REFRACTORY ANCHORS, FASTNERS, CUSTOMISED PLATE FABRICATION, ETC.





STAINLESS STEEL CHEMICAL COMPOSITIONS (%)

AISI	Grades	C*	Mn*	P*	S*	SI*	Cr	Ni	Mo	Others
304	1.4301	0.08	2.00	0.045	0.030	0.75	18.0 - 20.0	8.0 - 10.5	-	-
304L	1.4306	0.03	2.00	0.045	0.030	0.75	18.0 - 20.0	8.0 - 12.0	-	-
309S	1.4828	0.08	2.00	0.045	0.030	0.75	22.0 - 24.0	12.0 - 15.0	-	-
310S	1.4845	0.08	2.00	0.045	0.030	1.50	24.0 - 26.0	19.0 - 22.0	-	-
314	1.4841	0.15	1.5	0.045	0.030	1.5-2.5	23.0 - 27.0	19.0 - 23.0	-	-
316	1.4401	0.08	2.00	0.045	0.030	0.75	16.0 - 18.0	10.0 - 14.0	Mo 2.0-3.0	-
316L	1.4404	0.03	2.00	0.045	0.030	0.75	16.0 - 18.0	10.0 - 14.0	Mo 2.0-3.0	-
316Ti	1.4571	0.08	2.00	0.045	0.030	0.75	16.0 - 18.0	10.0 - 14.0	-	Ti 5(C+N) Min, 0.70 Max
317L	1.4449	0.03	2.00	0.045	0.030	0.75	18.0 - 20.0	11.0 - 15.0	Mo3.0-4.0,	-
321	1.4541	0.08	2.00	0.045	0.030	0.75	17.0 - 19.0	9.0 - 12.0	-	Ti 5(C+N) Min, 0.70 Max
347	1.4550	0.08	2.00	0.045	0.030	0.75	17.0 - 19.0	9.0 - 13.0	-	Ti 10 x C
330	1.4864	0.08	2.00	0.030	0.030	0.75-1.5	17.0 - 20.0	34.0 - 37.0	-	-
409M	-	0.03	1.00	0.030	0.040	1.00	10.5 - 11.75	0.5 Max	-	Ti 6(C) Min-0.75 Max
410	1.4006	0.15	1.00	0.030	0.030	1.00	11.5 -13.5	0.75	-	-
430	1.4016	0.12	1.00	0.030	0.040	1.00	16.0 -18.0		-	-
431	1.4057	0.2	1.00	0.04	0.030	1.00	15.0 -17.0	1.25 - 2.50	-	EN 57
440C	-	0.95-1.0	1.00	0.04	0.03	1.00	16.0 -18.0		-	-
446	1.4762	0.2	1.5	0.04	0.03	1.00	23.0 - 27.0	0.60 MAX	-	-
17-4PH	1.4579	0.07	1.0	0.04	0.03	1.00	15 - 17.50	3.0 - 5.0	-	Cu 3.0 - 5.0
904L	-	0.02	2.00	0.030	0.045	1.00	19.0 - 23.0	23.0 - 28.0	MO 4.0-5.0	Cu 1 - 2

* = Max.

STAINLESS STEEL- MECHANICAL PROPERTIES

Mechanical Properties of wrought Stainless Steel
(All properties minimum specified as per code)

Type	UNS Designation	Condition	Tensile Strength Mpa	0.2% Proof Strength Mpa	Elongation % in 50mm	Hardness Brinell	ASTM Specification
304	S30400	Annealed	518	205	40	201	A240
304L	S30403	Annealed	485	170	40	202	A240
309S	S30900	Annealed	515	205	40	217	A167
310S	S31000	Annealed	515	205	40	217	A167
316	S31600	Annealed	515	205	40	217	A240
316L	S31603	Annealed	485	205	40	217	A240
316Ti	S31635	Annealed	515	205	40	217	A167
317L	S31703	Annealed	515	205	40	217	A240
321	S32100	Annealed	515	205	40	217	A240
330	No8330	Annealed	480	210	30	75	B536
409M	S40900	Annealed	380	205	22	179	A176
410	S41000	Annealed	450	205	22	217	A176
430	S43000	Annealed	450	205	22	183	A176
431	S43100	Annealed	965*	-	-	-	A580
440C	S44004	Annealed	760	450	14	223	A276
446	S44600	Annealed	515	275	20	217	A176
17-4PH	S17400	H1025	1070	1000	12	331	-
904L		Annealed	490	220	35	90	-

Introduction Duplex Steel

The **Duplex** structure gives this family of stainless steel a combination of attractive properties

Strength : Duplex stainless steels are about twice as strong as regular austenitic or ferritic stainless steels.

Toughness & Ductility : Duplex Stainless Steels have significantly better ductility than Ferritic grades & inferior to Austenitic Stainless Steels but toughness of Duplex Stainless Steels is better than both Ferritic & Austenitic stainless steels.

Corrosion resistance : As with all stainless steels, corrosion resistance depends mostly on the composition of the stainless steels. For chloride pitting and crevice corrosion resistance, their chromium, molybdenum and nitrogen contents are most important.

Stress corrosion cracking resistance : Duplex stainless steels show very good stress corrosion cracking (SCC) resistance, a property they have "inherited" from the ferritic side.

Cost : Duplex stainless steels have lower nickel and molybdenum contents than their austenitic counterparts of similar corrosion resistance. Due to the lower alloying content, duplex stainless steels can be lower in cost, especially in times of high alloy surcharges. Additionally, it may often be possible to reduce the section thickness of duplex stainless steels, due to its increased yield strength compared to austenitic stainless steels, The combination can lead to significant cost and weight savings compared to a solution in austenitic stainless steels.

These Grades are categorized in follows :

Regular Duplex	Lean Duplex	Super Duplex
UNS S32205 (2205, En 1.4462)	UNS S32101 (2101, EN 1.4162)	UNS S32750 (2507, EN 1.4410)
UNS S31803	UNS S32304 (2304)	UNS S32760 (EN 1.4501)
		UNS S32550 (EN 1.4507)

Regular Duplex UNS S32205 / S31803

The 2205 is the most widely used of the duplex stainless steels occupying more than 80% of the duplex stainless steel market. The 2205 alloy provides better corrosion resistance in various environments where 316L is generally used with an added advantage of its higher yield strength. All 2205 alloys are metallographically examined to ensure that the shipped product is free from presence of detrimental phases such as sigma. It is often used in form of welded pipe or tubular components. The alloy has also been applied as a formed and welded sheet product in environments where resistance to general corrosion and chloride stress corrosion cracking is important.

Grade	UNS No	C%	Cr%	Ni%	P %	Si %	S %	Mo%	N%	Mn%
31803	S31803	< 0.03	21.0-23.0	4.5-6.5	1.03 max	1 max	0.02 max	2.5-3.5	0.08-0.2	< 2.0
2205	S32205	< 0.03	22.0-23.0	4.5-6.5	0.03 max	1 max	0.02 max	3.0-3.5	0.14-0.20	< 2.0

Specification Equivalents :

UNS S31803, UNS S32205, EN 1.4462

ASTM A182, A240, A276, A789, A790 and A 815

Mechanical Properties (as per ASTM 240) :

Grade	YS (MPa)	UTS (MPa)	% Elongation	Hardness(BHN)
31803	450 min.	620 min.	25 min.	293 max.
2205	450 min.	655 min.	25 min.	293 max.

Physical Properties :

Density (Kg / M3)	Modulus of Elasticity (GPa)	Poisson's Ratio	Thermal Conductivity (W/moC)	Thermal Capacity (J/KgoC)	Electrical Resistivity
7800	200	0.3	15	500	0.80

General Characteristics :

1. PREN value 34 (Pitting Resistance Equivalent Number: %Cr +3.3*%Mo+16*%N)
2. It is an extra Low Carbon Duplex Stainless steel,
3. Its yield strength is nearly twice as that of the Austenitic Stainless Steels.
4. It has good weldability with minimal inter-granular corrosion in as welded condition.
5. It has high resistance to SCC in chloride and in hydrogen sulfide containing environments.
6. Exhibits high resistance to corrosion fatigue, pitting and crevice corrosion and erosion-corrosion.



Machinability :

- Cutting procedures with high speed steel tools are same as for AISI 316.
- With carbide tipped tools, the cutting speeds should be 40% less than for AISI 316 in roughing operations and 20% less for finish machining.

Fabricability :

- Nearly twice the force is required to initiate plastic deformation compared to that required for AISI 304L and 316L.
- Plastic deformation proceeds as easily as in Austenitic stainless steel beyond yield strength.
- It can be cold bent to 25% deformation without requiring subsequent heat treatment.
- Bending should be followed by annealing if the service conditions are prone to SCC.
- Hot bending maybe carried out in the range 950-1100 deg C and should be followed by quench annealing.
- Normal expanding methods can be used while expanding its tubes, but higher initial force is required and it should be completed in a single operation.

Weldability :

- It is welded easily by Manual Metal Arc Welding (MMAW) using covered electrode, (GTAW), Gas Metal Arc Welding (GMAW).
- Heat input should be in the range of 0.5-2.5kJ/mm
- Interpass temperature should be held to 150 deg C max.
- Preheat or postweld heat treatment is normally not required.
- Typical Filler metals are overalloyed with nickel like E2209.
- Welding with carbon steels, other stainless steels and nickel alloys is readily achieved.

Corrosion Resistance :

- Has better general corrosion resistance as compared to AISI 316L and 317L
- Welded joints easily pass inter-granular corrosion testing as per ASTM A262 Practice E-Strauss Test.
- Better resistance to pitting and crevice attack than 304 and 316 at higher temperatures and chloride contents.
- The combined high strength, hardness and corrosion resistance provide 2205 with superior corrosion fatigue and erosion / corrosion resistance.

Application :

- Chemical Industries Pumps, fans, centrifuges, sulphur melting coils,
- Chemical tanks
- Pulp & Paper Industries
- Digester in sulphate and sulfite plants, blow tanks, blow lines
- Petrochemical Industries
- Power Generation Industries
- Oil & Gas Industries
- Desalination
- Architecture and Construction
- Food Processing Equipment
- Biofuels plant
- Cargo tanks for ships and trucks



Super Duplex

UNS S32750 / 32760

Super Duplex Stainless steels, which combine high strength and excellent corrosion resistance in many environments, have found applications in chemical and process industries. Pulp mills, offshore systems, flue gas desulphurization units. Localized corrosion resistance of Super-Duplex Steels is close to what is achieved with 6% Mo Super-Austenitic grades.

UNS	C%	Cr%	Ni%	Mo%	N%	Mn%	Cu%	W	S	Si
S32750	< 0.03	24.0-26.0	6.0-8.0	3.0-5.0	0.24-0.32	< 1.20	< 0.5	-	-	-
S32760	< 0.03	24.0-26.0	6.0-8.0	3.0-4.0	0.20-0.30	< 1.00	0.5-1.0	0.5-1.0	-	-
S32550	< 0.04	24-27	4.5-6.5	2.9-3.9	0.10-0.25	< 1.5	1.5-2.5	-	0.03	1.60

Specification Equivalents :

- UNS: S32750, EN 1.4410
- UNS: S32760, EN 1.4501
- ASTM: A240, A480, A789, A790

Mechanical Properties (as per ASTM 240)

Grade	YS (MPa)	UTS (MPa)	% Elongation	Hardness(BHN)
UNS S32750	550 min.	795 min.	15 min.	310 max.
UNS S32760	550 min.	750 min.	25 min.	270 max.

General Characteristics :

- Super Duplex stainless steels exhibit PREN value higher than 40.
- Combines most desirable characteristics of both super-ferritic and Super-Austenitic steel.
- Has excellent resistance to chloride SCC, pitting, crevice and general corrosion and carbide related inter-granular corrosion.
- Possesses high strength & impact strength.
- Has high thermal conductivity and a lower coefficient of thermal expansion compared to Super Austenitic steels.



Fabricability :

- It should be hot worked in the range of 1250-1000 deg C, followed by a solution annealing at 1100 deg C and rapid quench.
 - It can be cold formed using methods similar to those commonly used for Stainless Steel. The primary difference is that the high yield strength makes it necessary to have higher forming forces, increased radius of bending, and increased allowance for spring back.
 - Deep drawing, stretch forming and similar processes are difficult to perform.
-

Weldability :

- It possesses good weldability and can be welded to itself and other materials by Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW), Plasma Arc Welding (PAW) or Submerged Arc Welding (SAW).
 - Surfaces must be clean before welding.
 - Preheating is not necessary, except to prevent condensation on cold metal.
 - The recommended heat input should be nearly about 0.3-1.5KJ/mm
 - The interpass temperature should not exceed 150 deg C.
 - The root should be shielded with commercial Ar or 90%N₂ / 10%H₂ purging gas for maximum corrosion resistance.
-

Corrosion Resistance :

- It is highly resistant to carbide related inter-granular corrosion due to its low carbon content which lowers the risk of carbide precipitation at the grain boundaries during heat treatment. Its critical pitting temperature (CPT) is superior to that of 904L.
 - It has excellent resistance to crevice corrosion and SCC,
 - Extremely resistant to uniform corrosion by organic acids such as formic and acetic acid and also to inorganic acids, especially those containing chlorides.
 - Excellent corrosion resistance against highly corrosive acids like Sulphuric, Nitric, Phosphoric acids.
-

Application :

- Oil and gas industry.
 - Petrochemical industries (polymerization reactor cycle pumps and pipework)
 - Offshore platforms (heat exchangers, process and service water systems, fire-fighting systems, and injection and ballast water systems)
 - Chemical process industries (heat exchangers and vessels)
 - Desalination plants (high pressure RO-plant and seawater piping)
 - Fertilizers (Recirculation tanks, sedimentation tanks, phosphate reactor recirculation pumps)
 - Power industry FGD systems
 - Utility & industrial scrubber systems (absorber towers, ducting, piping)
 - Mining/ Extraction (hot slurry pipe work, acid leach mining)
 - Sewage (critically important pipelines.)
 - Engineering applications (pressure vessels,)
-





Lean **Duplex** UNS S32101

Lean duplex stainless steels possess high strength coupled with corrosion resistance as compared to Austenitic grades like 316L. This grade has stable cost owing to low nickel and molybdenum contents. This can easily substitute standard austenitic grades like 304, 304L and even 316L in most environments.

Chemistry :

UNS	EN	C%	Cr%	Ni%	Mo%	N%	Mn%	Cu%
S32101	1.4162	< 0.04	21.0-22.0	1.35-1.7	0.1-0.8	0.2-0.25	4.0-6.0	0.1-0.8

Specification Equivalents :

UNS : S32101, EN 1.4162

Mechanical properties (as per ASTM 240):

YS (MPa)	UTS (MPa)	% Elongation	Hardness (BHN)
450min	650min.	30min.	290max.

Typical values of Mechanical Properties :

YS (MPa)	UTS (MPa)	% Elongation	Hardness (BHN)
485	690	36	220

General Characteristics :

- More corrosion resistant than 304
- More price stable than 304
- 2.3x stronger than 304 & cheaper than 304

Stainless Steel

310 / 310S / 310H

Grade 310 (UNS S31000) and its various subgrades combine excellent high temperature properties with good ductility and weldability.

Grade 310H (UNS 531009) has a carbon content restricted to exclude the lower end of the 310 range, so is the grade of choice for high temperature applications.

Grade 310S (UNS S31008) is used when the application environment involves moist corrosives in a temperature range lower than that which is normally considered "high temperature" service. The lower carbon content of 310S does reduce its high temperature strength compared to 310H.

"Dual Certification"

310H and 310S are often produced in "Dual Certified" form - mainly in plate and pipe. These items have chemical and mechanical properties complying with both 310H and 310S specifications. Product complying with 310 only or dual certified 310 and 310S may have a carbon content below 0.04% which will not be acceptable for some high temperature applications.

Typical Applications

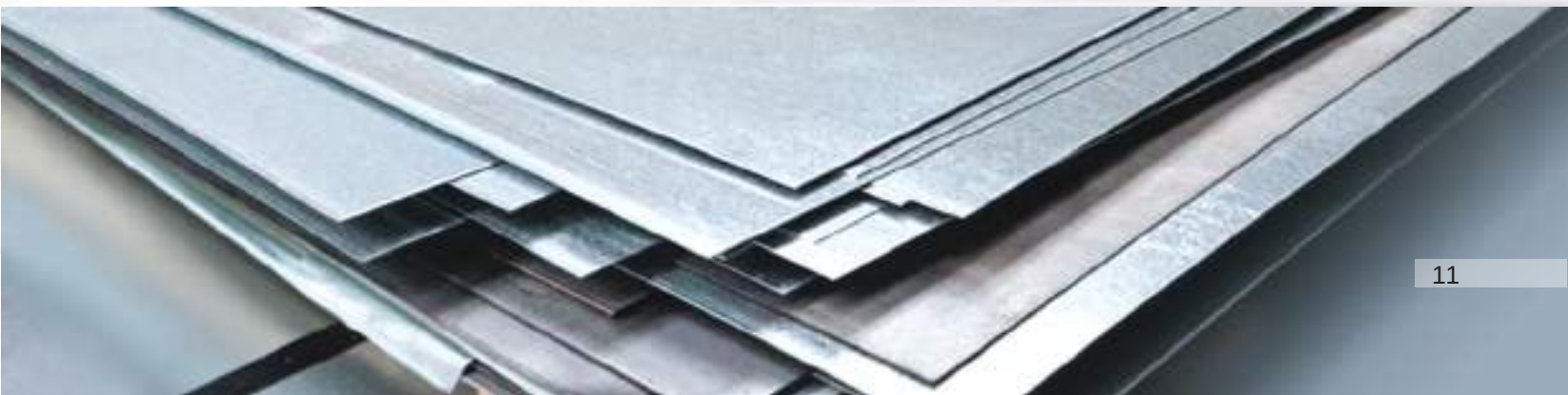
Furnace parts. Oil burner parts. Carburising boxes. Heat Treatment baskets and jigs. Heat exchangers. Welding filler wire and electrodes.

Compositions Specification % (single values are maximum)

Grade	-	C	Mn	Si	P	S	Cr	Ni
310	min.	-	-	-	-	-	24.0	19.0
	max.	0.25	2.00	1.50	0.045	0.030	26.0	22.0
310S	min.	-	-	-	-	-	24.0	19.0
	max.	0.08	2.00	1.50	0.045	0.030	26.0	22.0
310H	min.	0.04	-	-	-	-	24.0	19.0
	max.	0.10	2.00	0.75	0.045	0.030	26.0	22.0

Mechanical Property Specification

Grade	Tensile Strength (MPa) min	Yield Strength 0.2% Proof (MPa) min	Elongation (at 50mm) min	Hardness	
				Rockwell B (HR B) max	Brinell (HB) max
310	515	205	40	95	2.17
310S	515	205	40	95	2.17
310H	515	205	40	95	2.17





Stainless Steel

17 - 4 PH

Type 17-4 PH Stainless steel is the most widely used of all of the precipitation- hardening stainless steels. Its valuable combination of properties gives designers opportunities to add reliability to their products while simplifying fabrication and often reducing costs. Type 17-4 PH is a martensitic precipitation-hardening stainless steel that provides an outstanding combination of high strength, good corrosion resistance, and good mechanical properties at temperatures up to 600° F (316°C). Its unique combination of properties make this alloy an effective solution to many design and production problems.

Chemical Composition :

	Cr	Mn	Si	Ni	P	S	C	Cu	cb+Ta
MIN	15	-	-	3	-	-	-	3	0.15
Max	17.5	1	1	5	0.04	0.03	0.07	3.5	0.45

Resistance to Corrosion :

Type 17-4 PH stainless steel has excellent resistance. It withstand corrosive attack better than any of the standard hardenable stainless steels and is comparable to type 304 in most media. This has been tested in a wide variety of corrosive conditions in the petrochemical, petroleum, paper, dairy and food processing industries, and in applications such as boat shafting.

Specifications Equivalents :

ASME : SA564, SA693, SA705, Type 630.
AMS : 5604, 5604, 5622, 5643, 5825.
ASTM : A564, A693, A705, Type 360
UNS : S17400.
W. Nr / EN : 1.4548

Mechanical Properties :

Typical Mechanical Properties of Sheets and Strip - Cold Flattened (Annealed)

UTS (Tensile) Ksi (Mpa)	.02% Yield Strength Ksi (Mpa)	Elongation % in 2" (51mm)	Hardness Rockwell C -
160	145	5	35
(1103)	(1000)		

Type 17- 4 PH stainless steel has excellent mechanical properties. For applications requiring high strength and hardness as well as corrosion resistance, Type 17- 4 PH stainless is an outstanding choice, and it is more cost effective than many high nickel non-ferrous alloys.

General Characteristics :

- Excellent resistance to corrosion
- Provide toughness in both base metals and welds.
- Well suited to applications that require ease of fabrication and then the addition of strength / hardness for improved reliability

Applications :

- Aerospace applications
- Chemical processing equipment
- Oil and Petroleum refining equipment
- Food processing equipment
- General metalworking

Titanium

Grade - 2 & Grade - 5

Nitrogen	Carbon	Hydrogen	Iron	Oxygen	Aluminium	Vanadium	Residuals / Each	Residuals / Total	Titanium
Grade - 2 (3.7035) % max									
0.003	0.08	0.015	0.30	0.25	6- min	-	0.1	0.4	Rem
Grade - 5 (3.7055) % max									
0.03	0.10	0.015	0.30	0.25	-	4 - min	0.1	0.4	Rem



Sheet / Plate

Thickness : 0.5t, 0.8t, 1.0t, 1,.2t,
1.5t, 2.0t, 3.0t, 5.0t,
Max Width : 1229 mm



Flange

Thickness : min, 5.0t, max, 50t
Size : 1/2" to 12"



Weld Wire

Thickness : 1.0mm, 1.5mm, 2.0mm, 3.0mm
Length : 1500 mm.



Round Bar

Size : 4mm, 5mm, 6mm, 8mm, 10mm,
12mm, 16mm, 20mm, up to 100mm.



Fastener

Type : Hex Bolt, Counter Sunk,
Hex Nut, Plain Washer.



Mesh

Size : 1m x 1m, Opening, 5mm x 12mm.
As per Drawing

High Nickel Alloy Stock Profile

Alloy C276				
Hastelloy C276 Specification				
ASTM B574		NACE MRO175		
ASTM SB574				
Density - 8.89				
Has outstanding durability under reductive and oxidative environment. Has good corrosion resistance at weld hested srea and also shows outstanding resistance to pitting and stress corrosion.				
Major Chemical Composition (%)				
Ni	Cr	Mo	Cu	
55.0	16.0	16.0	-	
Fe	-	etc	-	
6.0	-	W 4.0	-	
ST				
Typical Mechanical Property (RT)	Tensile Strength 794 (MPa)	-	-	-
	0.2% Yield Strength (MPa)	402	-	-
	Elongation (%)	60	-	-
	Hardness (HB)	195	-	-

Alloy 20

Carpenter 20Cb3 Specification

ASTM B473

NACE MRO175

ASTM SB473

Density - 8.08

Shows outstanding corrosion resistance to reductive acid, especially to sulfuric acid and outstanding mechanical properties, and is easily processable.

Major Chemical Composition (%)

Ni	Cr	Mo	Cu
35.0	20.0	2.5	3.5
Fe	-	etc	-
37.0	-	Nb + Ta 1	-

An

Typical Mechanical Property (RT)	Tensile Strength794 (MPa)	617	-	-
	0.2% Yield Strength (MPa)	274	-	-
	Elongation (%)	50	-	-
	Hardness (HB)	184	-	-

Alloy 600				
Inconel 600 Specification				
ASTM B166		AMS 5665		
ASTM SB166		NACE MRO175		
Density - 8.42				
High-Ni and high Cr content alloy with outstanding oxidation resistance and corrosion resistance at high temperatures up to 1180C				
Major Chemical Composition (%)				
Ni	Cr	Mo	Cu	
76.0	15.5	-	-	
Fe	-	etc	-	
8.0	-	-	-	
		HW	CW	An
Typical Mechanical Property (RT)	Tensile Strength 794 (MPa)	706	882	608
	0.2% Yield Strength (MPa)	431	706	284
	Elongation (%)	38	20	45
	Hardness (HB)	100	205	145

Alloy 625

Inconel 625 Specification

ASTM B446
ASTM SB446

AMS 5666
NACE MRO175

Density - 8.44

Shows outstanding corrosion resistance, high strength, tenacity. oxidation resistance and fatigue strength at temperatures from extremely low to as high as 98°C

Major Chemical Composition (%)

Ni	Cr	Mo	Cu
61.0	21.5	9.0	-
Fe	-	etc	-
2.5	-	Nb + Ta 3.7	-

	HW	An		
Typical Mechanical Property (RT)	Tensile Strength794 (MPa)	980	931	-
	0.2% Yield Strength (MPa)	588	539	-
	Elongation (%)	45	45	-
	Hardness (HB)	210	180	-

Alloy 200 / 201

Nickel 200 / 201
Specification

ASTM B160 ASTM SB160

Density - 8.89

Unalloyed wrought Ni having good mechanical properties, outstanding corrosion resistance, and useful thermal and electrical conductivities Suitable for use at temperature of 315C or higher, compared to Alloy 200.

Major Chemical Composition (%)

Ni	Cr	Mo	Cu
99.0	-	-	-
-	-	etc	-
-	-	Co.01	-

H W C W A n

Typical Mechanical Property (RT)	Tensile Strength 794 (MPa)	372	539	392
	0.2% Yield Strength (MPa)	117	441	117
	Elongation (%)	50	20	50
	Hardness (HB)	90	160	90

Alloy 400

Monal 400
Specification

ASTM B164 NACE MR0175
ASTM SB164

Density - 8.83

Ni-Cu Alloy with good weldability and good workability, and outstanding corrosion resistance in a wide range of marine and chemical environments.

Major Chemical Composition (%)

Ni	Cr	Mo	Cu
66.5	-	-	31.5
Fe	-	etc	-
1.2	-	-	-

H W CW/DC A n

Typical Mechanical Property (RT)	Tensile Strength 794 (MPa)	637	686	559
	0.2% Yield Strength (MPa)	490	539	255
	Elongation (%)	45	30	48
	Hardness (HB)	190	110	135

ALLOY 800 / H / HT

Incoloy 800, 800H and 800HT
Specification

ASTM B 409, B 408, B 407, B 564

Density - 7.94

Incoloy 800, 800H, and 800HT are nickel-iron-chromium alloys with good strength and excellent resistance to oxidation and carburization in high-temperature exposure.

It is primarily used in applications with temperatures up to 1100° F, where alloys 800H and 800HT are normally used in temperatures above 1100° F where resistance to creep and rupture is required.

Major Chemical Composition (%)

Ni	Cr	Ma	Si
35	19-23	1-5	1
Co	Ti	AL	C
0.75	0.15-0.6	0.15-0.6	0.1

Typical Mechanical Property (RT)	Tensile Strength 794 (MPa)	600	-	-
	0.2% Yield Strength (MPa)	295	-	-
	Elongation (%)	44	-	-
	Hardness (Brinell)	-	-	-

254 Mo

Alloy 254 SMO
Specification

ASTM A813, ASTM A469, ASTM A269,
ASTM A240, ASTM A182 (F44)

Density - 8.06

254 SMO™ is a very high end austenitic stainless steel. It is designed with a combination of impact toughness resistance to chloride stress corrosion cracking, and pitting and crevice corrosion with strength that is twice that of the stainless steel 300 series.

Major Chemical Composition (%)

Ni	Cr	Mo	N
18	20	6.1	0.20
C	-	-	-
0.010	-	-	-

Typical Mechanical Property (RT)	Tensile Strength 794 (MPa)	680	-	-
	0.2% Yield Strength (MPa)	300	-	-
	Elongation (%)	50 %	-	-
	Hardness (Brinell)	210	-	-

Disclaimer : All the information on this table is published in good faith and for general information purpose only and not for technical design purposes. We do not make any warranties about the completeness, reliability and accuracy of this information. Any action you upon the take information on this table is strictly at your own risk, and we will not be liable for any losses and damages in connection with the use of this table.

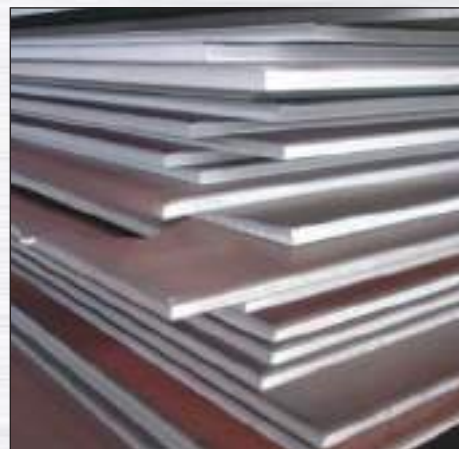
WEAR RESISTENT

Abrasion Resistent Plates

EXTRA HIGH STRENGTH

Applications for these plates : Dumper bodies, containers, crushes, conveyors, buckets, knives, gears, dump trucks, lorries, bulldozers, slurry pipe systems, etc.

Name	Its Manufacture	Country
Sumihard / Abrex	Sumitomo & Nippon steel	Japan
Hardox	SSAB	Sweden
SWEBOR	SWEBOR STAL	SWEDEN
Everhard	JFE Steel	Japan
Raex	Rukki	Finland
Fora	Indu Steel	Belgium
XAR	Thyssenkrup Metal	Germany
Abrazo	Corus	Europe
Dillidur	Dillinger	Germany
Quard	Duferco	Belgium



Abrasion & Wear Resistant Steel Plate

Chemical Properties

Grade	C max max	Mn	P max	S max max	Si	Cr max	I max	Mo max	B max	V	Other Element
Hardox 400	0.20	1.60	0.025	-	0.70	0.80	1.00	0.80	0.004	-	-
Sumihard k400	0.17	1.25	0.012	0.003	0.29	0.02	0.02	0.10	-	-	-
Swebor 400	0.18	1.2	0.02	0.01	0.25	0.2	-	0.60	0.002	-	-
Fora 400	0.20	1.60	0.020	0.003	0.01	1.00	0.50	0.20	0.003	-	-
Raex 400	0.20	1.70	0.030	0.015	0.70	1.50	0.40	0.50	0.004	-	Ai=.060 max
Dillidur 400	0.20	1.80	0.025	0.01	0.50	1.50	0.80	0.50	0.005	0.08	Nb=.05 max
JFE EH360LE	0.17	1.60	0.020	0.01	0.55	0.40	-	0.35	0.004	0.02	-
Quard 400	0.16	1.60	0.025	0.01	0.70	0.50	0.25	0.25	0.005	-	-

Physical Properties

Grade	Origin	Tensile Mpa	Mpa	Elongation in 2 inches (min) %	Brinell
Hardox 400	Sweden	1250	1000	10	360-440
Sumihard / Abrex k400	Japan	1322	1075	10	360-440
Swebor 400	Sweden	1250	1050	10	min 400
Fora 400	Belgium	1350	1100	13	360-440
Raex 400	Finland	1200	1000	10	360-420
Xar 400	Germany	1250	1020	12	360-440
Dillidur 400	Germany	1200	1000	12	370-430
JFE EH360LE	Japan	1308	1050	10	361-440
Quard 400	Belgium	1250	1050	10	370-430

High Strength Structural Steel Plates

Chemical Properties

Grade	C max	Mn max	P max	S max	SI max	Cr max	NI max	Mo max	B max	V	Other
DOMEX 700 MC	0.12	2.1	0.025	0.01	0.1	-	-	-	-	-	V+Nb+Ti=0.22%
NAXTRA 700	0.1	2	0.2	0.01	0.2	-	-	-	-	-	Ai:-0.015
OPTIM700	0.2	1.7	0.2	0.01	0.8	1.5	-	0.7	-	-	Cu=.50
WEL DOX 700	0.2	1.6	0.2	0.01	0.6	0.7	2	0.7	0.005	0.04	Nb=.04,V=.09, N=.015,Cu=.30
JFE 780 LE	0.2	1.4	0.025	0.015	0.4	0.2	-	0.15	0.005	-	V=.08

Physical Properties

Grade	Tensile Mpa	Yield Strength Mpa	Elongation in 2 Inches (min)%
DOMEX 700 MC	750-950	700	12
NAXTRA 700	710-940	630-690	15
OPTIM700	710-940	690	14
WEL DOX 700	780-930	700	18
JFE 780 LE	685	780-930	16

Sailma High Strength Micro Alloy Structural Steel (semi killed)

Chemical Composition

Grade	C% Max	Min% Max	S% Max	P% Max	Nb+V+Ti% Max
SAILMA300	0.25	1.50	0.055	0.055	0.20
SAILMA300HI	0.20	1.50	0.040	0.040	0.20
SAILMA 350	0.25	1.50	0.040	0.040	0.20
SAILMA350HI	0.20	1.50	0.040	0.040	0.20
SAILMA410	0.25	1.50	0.040	0.040	0.20
6AILMA410HI	0.20	1.50	0.040	0.040	0.20
SAILMA450	0.25	1.50	0.040	0.040	0.20
SAILMA450HI	0.20	1.50	0.040	0.040	0.20

Mechanical Properties

Grade	UTS (MPa)	YS (Mpa) Min	El. % Min 5.65 So	IMPACT CHARPYV 0°C-20°C Joules (Min)		Bend Test
SAILMA300	440-560	300	20	-	-	3T
SAILMA300HI	440-560	300	21	40	-	
SAILMA350	490-610	350	20	-	-	3T
SAILMA350HI	490-610	350	21	40	30	3T
SAILMA410	510-660	410	19	-	-	3T
SAILMA410HI	540-660	410	20	35	25	3T
SAILMA450	570-720	450	18	-	-	3T
SAILMA 450HI	570-720	450	19	30	20	3T



Available Sizes :- 2mm, 2.5mm, 3mm, 4mm, 5mm, 6mm, 8mm,10mm, 12mm, 15mm, 16mm, 20mm, 25mm, 30mm, 32mm, 40mm, 45mm, 50mm upto 130mm

Dimensions :- Width : 1500mm / 2000mm / 2500 mm / 3000mm | Length : 6000mm / 8000mm

We are directly Importer of the above mention Grades and Brands.

Disclaimer :- All the, above-mentioned brands and grades are the Registered Trade mark of there respective companies. We are only the importers, stockist and suppliers of the same. Copying and distributing the wrong data is a punishable offence.

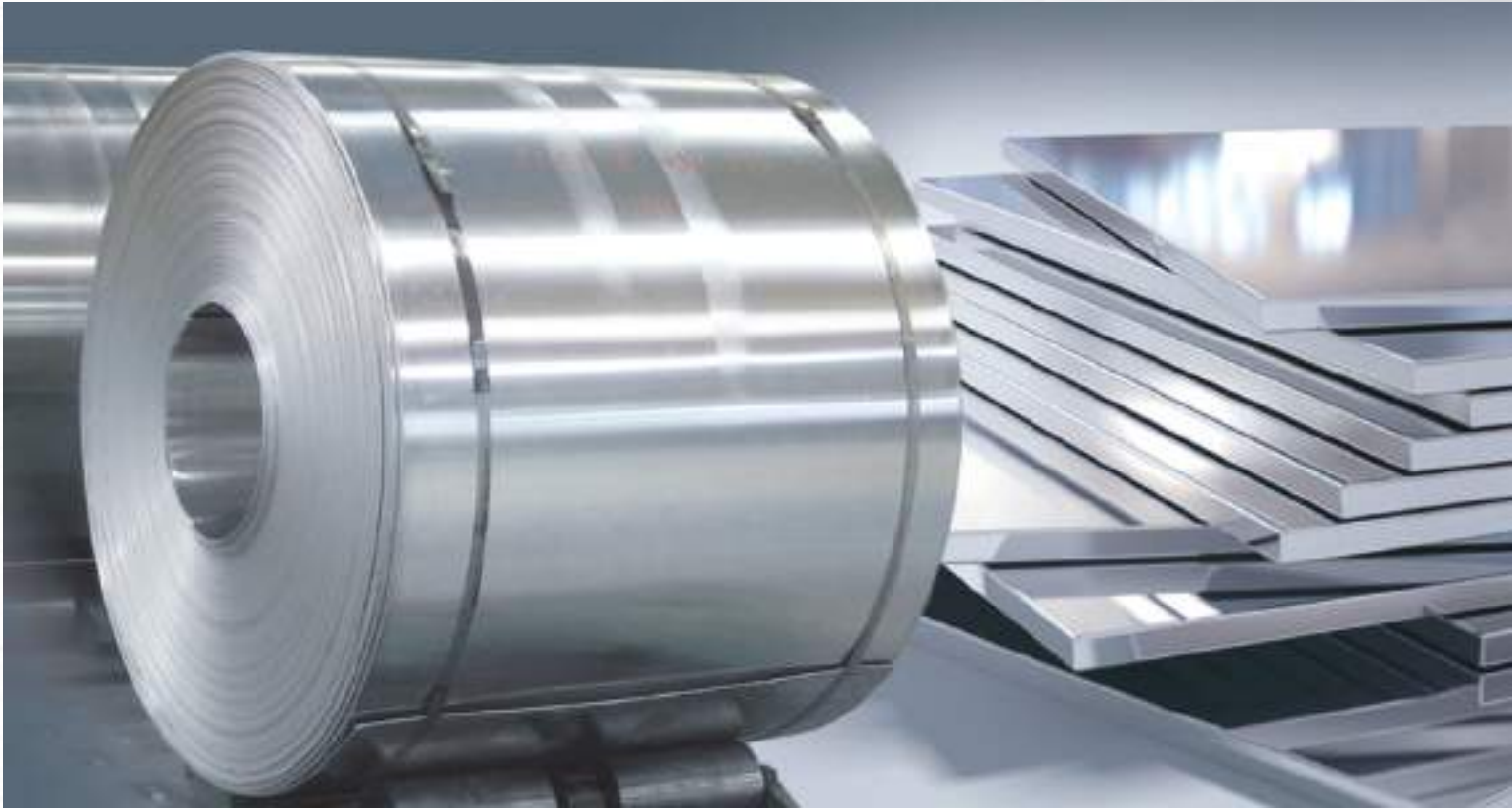


Alloy Steel Plates in

**SA 387 GR 11 / SA 387 GR 22 / SA 387 GR 91
SA 387 GR 12 / SA 387 GR 5 / 16MO3.**

**In Range of
1250 mm to 2500 mm Width.**

Sheet / Plate / Coil



Range	:- 0.5 to 5 mm Thick in Sheet, Strip & Coil etc.
	:- 5 mm to 150 mm + Thk in Various Size in Coil / Sheet / Plate.
Stainless Steel	:- ASTM A-240 - TP 304, 304H, 304L, 316, 316H, 316L, 316Ti, 309, 310, 317L, 321, 347, 409, 410, 420, 430, 446, 904L, 202, 17 4ph etc.
Duplex Steel	:- 2205, 31803, 32750, 32760, 2101, 2304.
Nickel Alloy	:- Hastelloy, Nickel, Monel , Inconel , Alloy 20, Cupro Nickel, Copper, etc.
Carbon Steel	:- IS 2062, A36.
Boiler Quality	:- ASTM 516 Gr.70.
Finish	:- 2B, 2D, HR, CR, BA (No. 8 & No. 4), Satin (Matt with Plastic Coated).
Form	:- Coils, Foils, Rolls, Plain Sheet, Shim Sheet, Perforated Sheet, Chequered Plate, Strip, Flats, Blank (Circle), Ring (Flange) etc.
Manufacturing	:- Perforated Sheet.
Test Certificate	:- MTC, Lab.TC from Govt. App. Lab. with Third Party Inspection.

Pipes & Tubes



PIPES

Range	:- 1/8 NB To 1200 NB in Sch. 5,10, 20, 30, 40, 60, 80, 100, 120, 140, 160, XXS.
Stainless Steel	:- ASTM A312, A358 - TP 304, 316, 309, 310, 317L, 321, 347, 904 L etc.
Duplex Steel	:- 2205, 31803, 32750, 32760, 2101, 2304.
Carbon Steel	:- ASTM A-106 Gr. B, ASTM A 53, API 5L.
Alloy Steel	:- ASTM A 335- P5, P9, P11, P12, P21, P22 & P91 (with IBR Test Certificate)
Nickel Alloy	:- Hastelloy, Nickel, Monel, Inconel, Alloy 20 etc.
Low Temperature	:- ASTM - 333 Gr. 6.
Form	:- Round, Square, Rectangle, Hydraulic, etc.
Test Certificate	:- MTC, IBR TC, Lab.TC from Govt. App. Lab. with Third Party Inspection.
Specialize	:- IBR Pipes, Fabricated Pipes (with Radiography) & Odd size etc.

TUBES

Range	:- 1/4" OD to 12" OD in Guage : 25 Swg. to 10 Swg.
Stainless Steel	:- ASTM A-213 & A-249-TP 304, H, L, 316, 316L, 309, 310, 317L, 321, 347, 904, L 202.
Carbon Steel Tube	:- BS 3059 Gr. 360 / 440, SA, 179, SA / ASTM A 210 Gr. A 1.
Alloy Steel Tube	:- ASTM A 213 - T-1 1, T-12, T-22, T-5, T-9 etc.
Nickel Alloy	:- Hastelloy, Nickel, Monel, Inconel, Alloy 20 etc.
Other Pipes & Tubes	:- ERW / CDW Boiler Tubes, Air Heater Tubes & Cold Drawn Seamless Tubes.
Form	:- Round, Square, Rectangle,
Test Certificate	:- MTC, IBR TC, Lab. TC from Govt. App. Lab. with Third Party Inspection.

Forged Fittings

FORGED FITTINGS

Range	:	15 NB To 100 NB in LBS : 3000#, 6000#, 9000#.
Form	:	S/W. & SCRD.
Type	:	Elbow, Tee, Union, Cross, Swage Nipples Coupling, CAP, Plug, Bush, Sokolet, Weldolet, Thredolet, Elbolet, Nipolet.
Stainless Steel	:	ASTM A 182 F -.304, 304L, 304Ti, 316, 309, 310, 317L, 321, 347, 904L.
Duplex Steel	:	2205 (F60), 31803 (F51), 32750, 32760.
Carbon Steel	:	ASTM A-105, A-350 LF2.
Alloy Steel	:	ASTM A 182- F5, F9, F11, F12, F21, F22 & F91.
Nickel Alloy	:	Cupro Nickel, Hastelloy, Nickel, Monel, Inconel, Alloy 20 etc.
Test Certificate	:	MTC, Govt. App. Lab.
Specialize	:	IBR Fitting, Swage Nipple.



Butt Weld Fittings



BUTT WELD FITTINGS

Range	:-	15 NB To 1200 NB in Sch. 5,10, 20, 30, 40, 60, 80, 100, 120, 140, 160, XXS.
Type	:-	Bend - Long & Short, Radius to 1.5D, 3D, 5D, 6D, 10D etc. Elbow - 45 Deg., 90 Deg. & 180 Deg. Tee - Barred, Equal, Unequal, Reducer - Con & Ecc, CAP, Nipple - Swage & Barrel, Stubend - Long & Short, etc.
Stainless Steel	:-	ASTM A 403 WP - TP 304, H, L, 316, 309, 310, 317L, 321, 347, 904L.
Duplex Steel	:-	2205, 31803, 32750, 32760, 2101, 2304.
Carbon Steel	:-	ASTM A 234 WPB, A-420 WPL6.
Alloy Steel	:-	ASTM A 234 WP - P5, P9, P11, P12, P21, P22 & P91.
Nickel Alloy	:-	Cupro Nickel, Hastelloy, Nickel, Monel , Inconel , Alloy 20 etc.
Test Certificate	:-	MTC, IBR TC, Lab.TC from Govt. App. Lab. with Third Party Inspection.
Specialize	:-	* Long Bend with Radius R=3D, 5D, 10D etc.

Bars

BAR

Range	:- Dia 5 mm to 500 mm & Length 500 mm to 6000 mm.
Stainless Steel	:- ASTM A-479, A-182- 304, 304L, 316, 316L, 309, 310, 317L, 321, 347, 409, 410, 420, 430, 440, 446, 904L. etc.
Duplex Steel	:- 2205, 31803, 32750, 32760, 2101, 2304.
Alloy Steel	:- A-182 - F5, F9, F11, F12, F21, F22 & F91
Special Grade	:- Stainless Steel 17-4 PH, Alloy 800, Alloy 600. Hastelloy C276.
Carbon Steel	:- A 105, LF 2, Duplex Steel.
Form	:- Round, Square, Hex (A), Rectangle, Flat, Ingot, etc.
Other Services	:- Forging, Rolling, Casting, Machining (CNC), Centreless Grinding (CG), Heat Treatment Polish, Anodising, Cutting, Bending, Minor Fabrication,
Test Certificate	:- MTC, Lab.TC from Govt. App. Lab. with Third Party Inspection.



Flanges



FLANGES

Range	:-	15 NB to 750 NB. - LBS : 150#, 300#, 600#, 900#, 1500# & 2500#. Table : ASA 150# & 300#. D, E, F, H, DIN, ND-6, 10, 16, 25, 40 etc.
Table	:-	SORF, WNRF, BLRF, SWRF, LAP Joint, Threaded, Reducing, Spectacle etc.
Stainless Steel	:-	ASTM A-182 & A-240 : F-304, H, L, 316, H, L, Ti, 309, 310, 317L, 321, 347, 904L.
Duplex Steel	:-	2205, 31803, 32750, 32760, 2101, 2304.
Carbon Steel	:-	ASTM A 105, A-350 LF 2, IS 2062, A-516 etc.
Alloy Steel	:-	ASTM A 182- F5, F9, F11, F12, F21, F22 & F91.
Nickel Alloy	:-	Cupro Nickel, Hastelloy, Nickel, Monel , Inconel , Alloy 20 etc.
Duplex	:-	ASTM A 182- F 51, F 53, F 60, etc.
Test Certificate	:-	MTC, IBR TC, Lab.TC from Govt. App. Lab. with Third Party Inspection.

Fastener

FASTENER

Type	:-	Stud Bolts (Hex, Eye, Square, (U, J,) Nuts, (Nylock,) Washer (Star, Plain), Allen Caps, Screws, (CSK, Pen Head, Philip) etc.
Stainless Steel Fastener	:-	ASTM A - 193 & 194 Gr. B8, B8M, B8C, 8, 8M, 8C ect.
Duplex Steel	:-	2205, 31803, 32750, 32760, 2101, 2304.
High Tensile Fastener	:-	ASTM A - 193 & A 194 Gr. B7, B7M, B16, L7, L43, 2H, 2HM.
Cu-Ni Fastener	:-	C70400, C70600, (90 : 10). C71000, C71500 (70 : 30), C7 1640.
Nickel Fastener	:-	UNS N02200, N05500.
Monel Fastener	:-	UNS N04400, N05500.
Titanium Fastener	:-	Gr. 1, 2, 3, DIN3, 7025, DIn3., 7035, DIN3, 7055.



Refractory Anchors



Stainless Steel

Grades: 304, 316, 310

Unisteels & Engg. Co. (P) Ltd. is leading expertise in cement, steel & furnace industries for refractory anchors. We are also manufacturing anchors for Oil & Gas refinery, Power Plants, Chemical Plants and other related industries. We are consistently research and develop modern methods to meet new demands of customers. We also offer customized solution and technical expertise for the refinement of existing method to meet increased demands and quality productions for our customers.

Our organization will assure the delivery of satisfaction to customer will be our primary priority. We also thank to the customers who give us supports and trust for giving us the opportunity as the refractory solution partner.

We produce a wide range of standard anchoring systems, to match all types of lining. We offer anchors suitable for single and dual layer lining, brick, ceramic, fiber and castable refractory.

Range & Form V shape, Y shape and crook anchors but as per clients drawings and requirements.



Spiral-Y-Anchors

We are specialized in manufacturing superior quality Spiral Y-Anchors, these are widely used in various industrial applications.

Specifications

215 X 145 X 5 MM.
190 X 45 X 5 MM.
185 X 105 X 5 MM.
175 X 30 X 5 MM.
155 X 70 X 5 MM.
90 X 30 X 5 MM.
80 X 30 X 5 MM.



Anchors and Crook Anchors

We manufacture a comprehensive range of refractory anchors for the cement, steel and petrochemical industry - for the retaining of castable and brick linings.

Y Anchors and Crook Anchors are offered for immediate dispatch. Various C Clips and Hangers for ceramic anchors to suit individual requirements.

Specifications

230 X 115 X 05 MM.
200 X 100 X 05 MM.
150 X 75 X 05 MM.
75 X 25 X 05 MM.



V-Anchors

We are manufacturer & supplier of V-Anchor, to match all types of lining for cement, ceramic, steel, petrochemical, refinery industry for the retaining of monolithic, ceramic fiber and brick linings. Our anchors are suitable for single & dual layer lining, brick, ceramic, fiber and monolithic. All refractory anchor made from stainless steel [SS] 304, 310, Alloy 601- Inconel and other heat resistant alloys.

Specifications

55 X 15 X 05 MM.



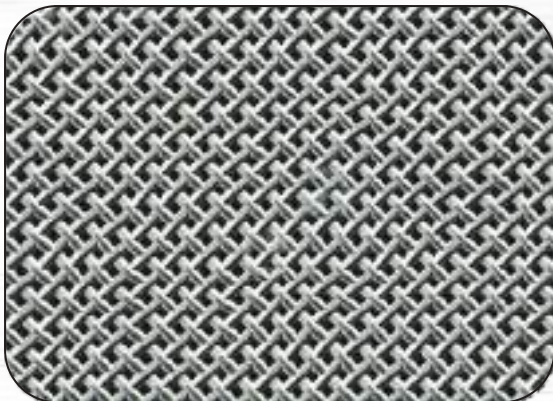
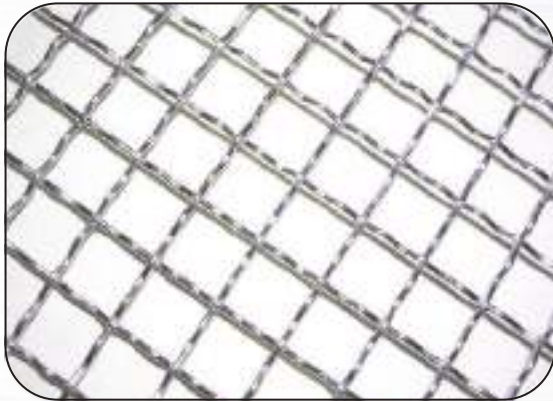
U-Anchors

We manufacture and export superior quality U-Anchors, these can be availed in various specifications like

Specifications

55 X 16 X 05 MM.
225 X 27 X 05 MM.
Wing Nut Type

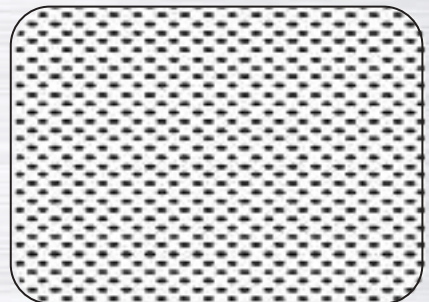
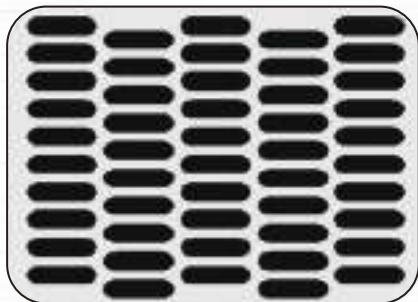
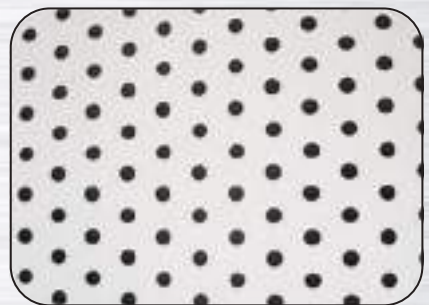
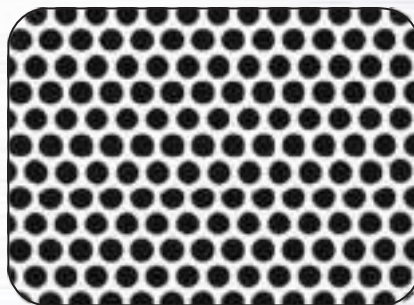
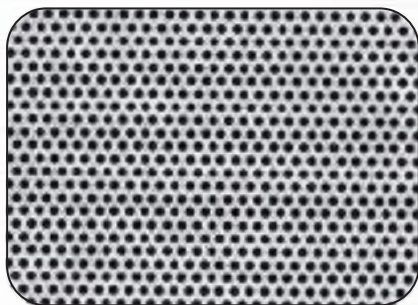
Wire Mesh



We are engaged in supplying wire mesh and cloth made of stainless steel, which gives it more attractive look and durability. Our range includes.

- **Crimped Wire Mesh** • **Wire Netting** • **Welded Wire Mesh**
- **Stainless Steel Wire Mesh** • **Woven Wire Cloth**

Perforated Sheets



UNISTEEL is a well established perforators sheet manufacturers in India. We manufacture and market extensive ranges of perforated sheets like galvanized, staggered, galvanized ms, stainless steel, plain steel perforated metal, triangular pitch perforated MS sheets, perforated metal sheets etc. The raw materials used by us are procured by highly reliable vendors, thereby making sure quality at the initial stage itself.

Our perforated sheets possess high tensile strength, durability and ability to withstand high temperature. We manufacture these sheets at industry standards sizes & specifications and also at customized dimensions as per the client's requirements. We also manufacture metal sheets, cable trays and press components.

- Galvanized MS Perforated Sheet
- Perforated MS Sheet With Triangular Pitch
- Perforated Metal Sheet
- Plain Steel Perforated Metal
- Galvanized Perforated Sheet
- Staggered Perforated Sheet

S / S Pipes & Tubes

S / S Pipes & Tubes

DESIG- OD			NOMINAL WALL THICKNESS										NOMINAL WALL THICKNESS																			
NATION OF D/A	CA	SCH.5S	SCH.5S		SCH.5	SCH.10		SCH.20		SCH.30		SCH.40S		SCH.40		SCH.60		SCH.80S/XS		SCH.80		SCH.100		SCH.120		SCH.140		SCH.160		SCH.XXS		
			Wall thk.	Weight Kg./Mtr.		Wall thk.	Weight Kg./Mtr.	Wall thk.	Weight Kg./Mtr.	Wall thk.	Weight Kg./Mtr.	Wall thk.	Weight Kg./Mtr.	Wall thk.	Weight Kg./Mtr.	Wall thk.	Weight Kg./Mtr.	Wall thk.	Weight Kg./Mtr.	Wall thk.	Weight Kg./Mtr.	Wall thk.	Weight Kg./Mtr.	Wall thk.	Weight Kg./Mtr.	Wall thk.	Weight Kg./Mtr.	Wall thk.	Weight Kg./Mtr.	Wall thk.	Weight Kg./Mtr.	
(A) mm	(B) mm																															
6	1/8"	10.8	-	-	1.24	0.28	1.24	-	1.50	0.33	1.45	0.32	1.73	0.37	1.73	0.37	-	-	2.41	0.47	2.41	0.47	-	-	-	-	-	-	-	-		
8	1/4"	13.7	-	-	1.65	0.49	1.65	-	2.00	0.58	1.85	0.59	2.24	0.63	2.24	0.63	-	-	3.02	0.80	3.02	0.80	-	-	-	-	-	-	-	-		
10	3/8"	17.1	-	-	1.65	0.63	1.65	-	2.00	0.74	1.85	0.70	2.31	0.84	2.31	0.84	-	-	3.20	1.10	3.20	1.10	-	-	-	-	-	-	-	-		
15	1/2"	21.3	1.65	0.80	2.11	1.00	2.11	1.00	2.30	1.07	2.41	1.13	2.77	1.27	2.77	1.27	-	-	3.73	1.62	3.73	1.62	-	-	-	-	-	-	4.78	1.95	7.47	3.64
20	3/4"	26.7	1.65	1.03	2.11	1.28	2.11	1.28	2.55	1.52	2.41	1.44	2.87	1.69	2.87	1.69	-	-	3.91	2.20	3.91	2.20	-	-	-	-	-	-	5.54	2.90	7.82	5.45
25	1	33.4	1.65	1.30	2.77	2.09	2.77	2.09	2.55	1.94	2.9	2.18	3.38	2.50	3.38	2.50	-	-	4.55	3.24	4.55	3.24	-	-	-	-	-	-	6.35	4.24	9.09	7.77
32	1 1/4"	42.2	1.65	1.65	2.77	2.70	2.77	2.70	3.00	2.90	2.92	2.87	3.56	3.39	3.56	3.39	-	-	4.85	4.47	4.85	4.47	-	-	-	-	-	-	6.35	5.61	9.70	9.56
40	1 1/2"	48.3	1.65	1.91	2.77	3.11	2.77	3.11	3.00	3.35	3.18	3.53	3.68	4.05	3.68	4.05	-	-	5.08	5.41	5.08	5.41	-	-	-	-	-	-	7.14	7.25	10.16	13.40
50	2	60.3	1.65	2.40	2.77	3.93	2.77	3.93	3.00	4.24	3.18	4.47	3.91	5.44	3.91	5.44	-	-	5.54	7.48	5.54	7.48	-	-	-	-	-	-	8.71	11.11	11.07	20.40
65	2 1/2"	73.0	2.11	3.69	2.11	3.69	3.05	5.26	3.50	6.81	4.78	8.04	5.16	8.63	5.16	8.63	-	-	7.01	11.41	7.01	11.41	-	-	-	-	-	-	9.53	14.92	14.02	27.70
80	3	88.9	2.11	4.51	2.11	4.51	3.05	6.45	4.00	8.37	4.78	9.90	5.49	11.30	5.49	11.30	-	-	7.62	15.30	7.62	15.30	-	-	-	-	-	-	11.13	21.35	15.24	34.10
90	3 1/2"	101.6	2.11	5.18	2.11	5.18	3.05	7.41	4.00	9.62	4.78	11.4	5.74	13.57	5.74	13.57	-	-	8.08	18.63	8.08	18.63	-	-	-	-	-	-	-	-	16.15	41.03
100	4	114.3	2.11	5.84	2.11	5.84	3.05	8.36	4.50	12.18	4.78	12.9	6.02	16.07	6.02	16.07	7.14	18.84	8.56	22.30	8.56	22.30	-	-	11.13	28.32	-	-	13.49	33.50	17.12	57.40
125	5	141.3	2.77	9.47	3.40	11.57	3.40	11.57	5.00	16.80	-	-	6.55	21.77	6.55	21.77	-	-	9.53	30.90	9.53	30.90	-	-	12.70	40.20	-	-	15.88	49.11	19.05	79.22
150	6	168.3	2.77	11.32	3.40	13.84	3.40	13.84	6.35	25.36	-	-	7.11	28.26	7.11	28.26	-	-	10.97	42.50	10.97	42.50	-	-	14.27	54.20	-	-	18.24	67.50	21.95	108.0
200	8	219.1	2.77	14.79	3.76	19.96	3.76	19.96	6.35	33.31	7.0	36.8	8.18	42.55	8.18	42.55	10.31	53.1	12.70	64.50	12.70	64.50	15.10	75.92	18.24	90.40	20.62	100.9	23.01	111.2	22.23	155.0
250	10	273.0	3.40	22.63	4.19	27.78	4.19	27.78	6.35	41.77	7.80	51.3	9.27	60.31	9.27	60.31	12.70	81.50	12.70	81.50	15.10	96.00	18.24	114.70	21.41	133.0	25.40	155.0	28.6	172.3	25.40	187.0
300	12	323.9	3.96	31.25	4.19	33.02	4.57	36.00	6.35	49.70	8.38	65.2	9.53	73.80	10.31	79.7	14.27	109.0	12.70	97.40	17.45	132.0	21.41	160.0	25.40	187.0	28.58	208.0	33.32	238.7	25.40	-
350	14	355.6	3.96	34.36	-	-	4.78	41.03	6.35	54.6	7.92	81.3	9.53	81.30	11.13	94.6	15.09	126.0	12.70	107.0	19.05	158.0	23.80	195.0	27.76	224.0	31.75	253.5	35.71	281.0	-	-
400	16	406.4	4.19	41.56	-	-	4.78	47.29	6.35	62.6	7.92	93.3	9.53	93.3	12.70	123.0	16.66	160.0	12.70	123.0	21.41	203.0	26.19	245.0	30.94	286.0	36.53	333.0	40.46	386.0	-	-
450	18	457.2	4.19	46.80	-	-	4.78	53.42	6.35	70.50	7.92	122.0	9.53	105.0	14.20	156.0	19.05	206.0	12.70	139.0	23.80	254.0	29.36	310.0	34.93	363.0	39.67	408.3	45.24	459.0	-	-
500	20	508.0	4.78	59.25	-	-	5.54	68.71	6.35	78.50	9.53	155.1	9.53	117.20	15.09	183.0	20.62	248.0	12.70	155.1	26.19	311.0	32.54	381.0	38.10	441.0	44.45	508.0	49.99	564.0	-	-
550	22	559.0	4.78	65.30	-	-	6.35	75.58	6.35	86.40	9.53	171.0	9.53	129.0	-	-	22.23	294.0	12.70	171.0	28.57	373.0	34.92	451.0	41.27	527.0	47.62	600.0	53.97	671.0	-	-
600	24	609.6	5.54	82.47	-	-	6.35	94.45	6.35	94.70	9.53	210.0	9.53	141.0	17.48	255.0	24.61	355.0	12.70	187.0	30.94	434.0	38.89	547.7	46.02	629.0	57.37	719.0	59.51	807.0	-	-



ASA PIPE SCHEDULES
WALL = WALL THICKNESS IN MILLI METER
WT = WEIGHT IN KG PER METER

CARBON STEEL SEAMLESS PIPE DIMENSIONS & WEIGHT

CARBON STEEL SEAMLESS PIPE DIMENSIONS & WEIGHT

Nominal O D Pipe size mm	Schedule 10		Schedule 20		Schedule 30		Standard		Schedule 40		Schedule 60		Extra Strong		Schedule 80		Schedule 100		Schedule 120		Schedule 140		Schedule 160	
	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt	Wall	Wt
1/8	10.3	-	-	-	-	-	1.73	0.375	1.73	0.375	-	-	2.41	0.470	2.41	0.470	-	-	-	-	-	-	-	-
1/4	13.7	-	-	-	-	-	2.24	0.630	2.24	0.630	-	-	3.0	0.800	3.0	0.800	-	-	-	-	-	-	-	-
3/8	17.1	-	-	-	-	-	2.31	0.840	2.31	0.840	-	-	3.2	1.10	3.2	1.10	-	-	-	-	-	-	-	-
1/2	21.3	-	-	-	-	-	2.77	1.270	2.77	1.270	-	-	3.73	1.62	3.73	1.62	-	-	-	-	-	-	4.78	1.95
3/4	26.7	-	-	-	-	-	2.87	1.69	2.87	1.69	-	-	3.91	2.20	3.91	2.20	-	-	-	-	-	-	5.56	2.90
1	33.4	-	-	-	-	-	3.38	2.50	3.38	2.50	-	-	4.55	3.24	4.55	3.24	-	-	-	-	-	-	6.35	4.24
1-1/4	42.2	-	-	-	-	-	3.56	3.39	3.56	3.39	-	-	4.85	4.47	4.85	4.47	-	-	-	-	-	-	6.35	5.61
1-1/2	48.3	-	-	-	-	-	3.68	4.05	3.68	4.05	-	-	5.08	5.41	5.08	5.41	-	-	-	-	-	-	7.14	7.24
2	60.3	-	-	-	-	-	3.91	5.44	3.91	5.44	-	-	5.54	7.48	5.54	7.48	-	-	-	-	-	-	8.74	11.1
2-1/2	73.0	-	-	-	-	-	5.16	8.63	5.16	8.63	-	-	7.01	11.4	7.01	11.4	-	-	-	-	-	-	9.52	14.9
3	88.9	-	-	-	-	-	5.49	11.29	5.49	1.29	-	-	7.62	15.27	7.62	15.27	-	-	-	-	-	-	11.13	21.35
3-1/2	101.6	-	-	-	-	-	5.74	13.57	5.74	13.57	-	-	8.08	18.63	8.08	18.63	-	-	-	-	-	-	-	-
4	114.3	-	-	-	-	-	6.02	16.07	6.02	16.07	-	-	8.56	22.32	8.56	22.32	-	-	11.13	28.32	-	-	13.49	33.54
5	141.3	-	-	-	-	-	6.55	21.77	6.55	21.77	-	-	9.52	30.94	9.52	30.94	-	-	12.7	40.28	-	-	15.88	46.11
6	168.3	-	-	-	-	-	7.11	28.26	7.11	28.26	-	-	10.97	42.56	10.97	42.56	-	-	14.27	54.20	-	-	18.26	67.56
8	219.1	-	-	-	-	-	8.18	42.55	8.18	42.55	10.31	53.08	12.7	64.64	12.7	64.64	15.09	75.92	18.26	90.44	20.62	101	23.01	111.31
10	273.0	-	-	-	-	-	9.27	60.29	9.27	60.29	12.7	81.52	12.7	81.52	15.09	81.52	18.26	114.7	2.44	133.0	25.4	155.09	28.57	172.21
12	323.8	-	-	-	-	-	9.52	73.78	10.31	79.70	14.27	108.92	12.7	97.43	17.48	97.43	21.44	159.86	25.4	187.0	31.75	208	33.3	239.0
14	355.6	6.35	54.60	7.92	67.90	9.52	81.25	9.52	11.13	94.55	15.09	126.71	12.7	108.92	19.05	108.92	23.83	195.0	27.79	253.56	31.8	253.56	35.75	281.70
16	406.4	6.35	62.64	7.92	77.83	9.52	93.17	9.52	12.7	123.30	16.66	162.12	12.7	123.30	21.44	123.30	26.2	245.56	30.96	286.64	36.53	333.19	40.5	365.45
18	457.2	6.35	70.60	7.92	87.75	11.13	122.43	9.52	105.01	14.27	155.87	19.05	205.83	12.7	139.2	23.83	139.2	29.4	310.0	34.92	363.14	39.7	408.45	45.24
20	508.0	6.35	78.55	9.52	117.02	12.7	155.12	9.52	117.02	5.09	183.42	20.62	247.83	12.7	155.12	26.2	381.53	381	441.49	44.45	508.11	50.0	564.87	-
22	558.8	6.35	86.4	9.52	129.0	12.7	172.0	9.52	129.0	-	-	22.2	294.0	12.7	172.0	28.6	451.0	34.9	526.0	47.6	603.56	54.0	672.0	-
24	609.6	6.35	94.46	9.52	140.88	14.27	209.50	9.52	140.88	17.48	255.24	24.61	355.0	12.7	186.94	30.96	547.33	38.89	639.58	52.37	719.63	59.54	807.63	-

DIMENSIONS AND NOMINAL WEIGHTS OF BLACK STEEL TUBS IN ACCORDANCE WITH IS: 1239 (PART 1) - 1979

DIMENSIONS AND NOMINAL WEIGHTS OF BLACK

Outside daimeter										Thickness				Weight of black tube				Diamention of sockets			
Nominal	Light		Medium & Heavy		Light		Medium		Heavy		Light		Medium		Heavy		Diamention of sockets				
	Max	Min	Max	Min	mm	swg	mm	swg	mm	swg	Plain	Screwed	Plain	Screwed	Plain	Screwed	Diameter	Length			
Bore	mm	mm	mm	mm							End	Socketed	End	Socketed	End	Socketed	Min	Min			
mm											kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	mm	mm			
6	10.1	9.7	10.6	9.8	1.8	15	2.0	14	2.65	12	0.361	0.364	0.407	0.410	0.496	0.496	15	19			
8	13.6	13.2	14.0	13.2	1.8	15	2.35	13	2.9	11	0.517	0.521	0.650	0.654	0.769	0.773	18.5	27			
10	17.1	16.7	17.5	16.7	1.8	15	2.35	13	2.9	11	0.674	0.680	0.852	0.858	1.02	1.03	22	28			
15	21.4	21.0	21.8	21.0	2.0	14	2.65	12	3.25	10	0.952	0.951	1.22	1.23	1.45	1.46	27	37			
20	26.9	26.4	27.3	26.5	2.35	13	2.65	12	3.25	10	1.41	1.42	1.58	1.59	1.90	1.91	32.5	39			
25	33.8	33.2	34.2	33.3	2.65	12	3.25	10	4.05	8	2.01	2.03	2.44	2.46	2.97	2.99	39.5	46			
32	42.5	41.9	42.9	42.0	2.65	12	3.25	10	4.05	8	2.58	2.61	3.14	3.17	3.84	3.87	49	51			
40	48.4	47.8	48.8	47.9	2.9	11	3.25	10	4.05	8	3.25	3.29	3.61	3.65	4.43	4.47	56	51			
50	60.2	59.6	60.8	59.7	2.9	11	3.65	9	4.5	7	4.11	4.18	5.10	5.17	6.17	6.24	68	60			
65	76.0	75.2	76.6	75.3	3.25	10	3.65	9	4.5	7	5.80	5.92	6.51	6.63	7.90	8.02	84	69			
80	88.7	87.9	89.5	88.0	3.25	10	4.05	8	4.85	6	6.81	6.98	8.47	8.64	10.1	10.3	98	75			
100	113.9	113.0	115.0	113.1	3.65	9	4.5	7	5.4	5	9.89	10.2	12.1	12.4	14.4	14.7	124	87			
125	-	-	140.8	138.5	-	-	4.85	6	5.4	5	-	-	16.2	16.7	17.8	18.3	151	96			
150	-	-	166.5	163.9	-	-	4.85	6	5.4	5	-	-	19.2	19.8	21.2	21.8	178	96			

BIG DIAMETER ERW PIPES CONFIRM 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 OD	Nominal Bore 18" NB 457 mm OD	Nominal Bore 20" NB 508 mm OD
4.85	22.59	25.62	32.07	38.18	-	-	-	-
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	-	93.13	-	-
9.53	-	51.50	60.24	73.75	81.21	-	105.00	117.00
12.70	-	-	-	-	107.28	123.00	139.00	155.00

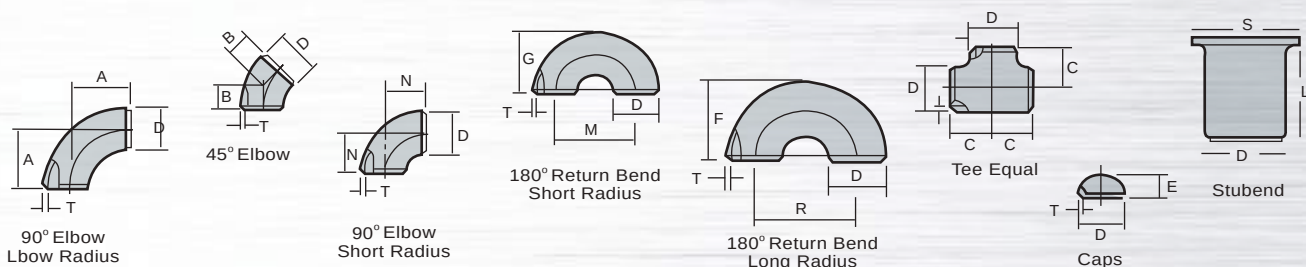
Tolerance on Thickness and weight
The following manufacturing shall be permitted on the tubes and sockets.

(a) Thickness
(1) Butt welded Light tubes +Not limited
-8 percent
Medium and Heavy tubes +Not limited
-10 percent
-12.5 percent

(b) Weight
(1) Single tube (light series) + 10 percent
- 8 percent
(2) single tube (medium and heavy series)± 10 percent

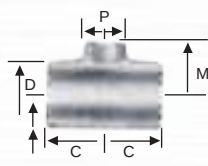
BUTT WELDING PIPE FITTING DIMENSIONAL STANDARD

ANSI B-16.9 / 16.28 / MSS SP-43

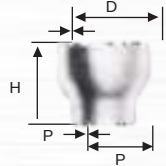


Nominal Pipe Size		Outside Diameter	Center to Face				Back to Face			Center to Center			Length 'L'	
Inch.	mm	D	A	B	C	N	E	F	G	R	M	S	MSS SP43	ANSI B 16.9
1/2	15	21.3	38	16	25	-	25	48	-	76	-	34.9	50.8	76.2
3/4	20	26.7	29	11	29	-	25	43	-	57	-	42.8	50.8	76.2
1	25	33.4	38	22	38	25	38	56	41	76	51	50.8	50.8	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	50.8	101.6
2	50	60.3	76	35	64	51	38	106	81	152	102	92	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	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	101.6	203.2
10	250	273.1	381	159	216	254	127	518	391	762	508	324	127.0	254.0
12	300	323.9	457	190	254	305	152	619	467	914	610	381	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	500.4	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							

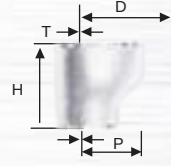
BUTT- WELDING PIPE FITTING ANSI B 16.9 / 16.28



Reducing Tees



Concentric Reducers



Eccentric Reducers

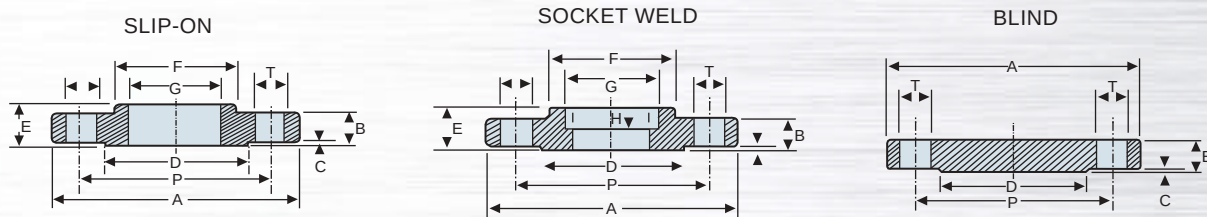


Nominal Pipe Size		Outside Diameter		Center to End		Length
Inch.	mm	D	P	C	M	H
112 x 3/8	15 x 10	21.3	17.1	25	25	38
1/2 x 1/4	15x8	21.3	13.7	25	25	38
3/4 x 1/2	20 x 15	26.7	21.3	29	29	38
3/4 x 3/8	20 x 10	26.7	17.1	29	29	38
1 x 3/4	25 x 20	33.4	26.7	38	38	51
1 x 1/2	25 x 15	33.4	21.3	38	38	51
1 1/4 x 1	32 x 25	42.2	33.4	48	48	51
1 1/4 x 3/4	32 x 20	42.2	26.7	48	48	51
1 1/4 x 1 1/2	32 x 15	42.2	21.3	48	48	51
1 1/2 x 1 1/2	40 x 32	48.3	42.2	57	57	64
1 1/2 x 1	40 x 25	48.3	33.4	57	57	64
1 1/2 x 3/4	40 x 20	48.3	26.7	57	57	64
1 1/2 x 1/2	40 x 15	48.3	21.3	57	57	64
2 x 1 1/2	50 x 40	60.3	48.2	64	60	76
2 x 1 1/4	50 x 32	60.3	42.2	64	57	76
2 x 1	50 x 25	60.3	33.4	64	51	76
2 x 3/4	50 x 20	60.3	26.7	64	44	76
2 1/2 x 2	65 x 50	73.0	60.3	76	70	89
2 1/2 x 1 1/2	65 x 40	73.0	48.3	76	67	89
2 1/2 x 1 1/4	65 x 32	73.0	42.2	76	64	89
2 1/2 x 1	65 x 25	73.0	33.4	76	57	89
3 x 2 1/2	80 x 65	88.9	73.0	86	83	89
3 x 2	80 x 50	88.9	60.3	86	76	89
3 x 1 1/2	80 x 40	88.9	48.3	86	73	89
3 x 1 1/4	80 x 32	88.9	42.2	86	70	89
3 1/2 x 3	90 x 80	101.6	88.9	95	92	102
3 1/2 x 2 1/2	90 x 65	101.6	73.0	95	89	102
3 1/2 x 2	90 x 50	101.6	60.3	95	83	102
3 1/2 x 1 1/2	90 x 40	101.6	48.3	95	79	102
3 1/2 x 1 1/4	90 x 32	101.6	42.2	-	-	102
4 x 3 1/2	100 x 90	114.3	101.6	105	102	102
4 x 3	100 x 80	114.3	88.9	105	98	102
4 x 2 1/2	100 x 65	114.3	73.0	105	95	102
4 x 2	100 x 50	114.3	60.3	105	89	102
4 x 1 1/2	100 x 40	114.3	48.3	105	86	102
5 x 4	125 x 100	141.3	114.3	124	117	127
5 x 3 1/2	125 x 90	141.3	101.6	124	114	127
5 x 3	125 x 80	141.3	88.9	124	111	127
5 x 2 1/2	125 x 65	141.3	73.0	124	108	127
5 x 2	125 x 50	141.3	60.3	124	105	127
6 x 5	150 x 125	168.3	141.3	143	137	140
6 x 4	150 x 100	168.3	114.3	143	130	140
6 x 3 1/2	150 x 90	168.3	101.6	143	127	140
6 x 3	150 x 80	168.3	88.9	143	124	140
6 x 2 1/2	150 x 65	168.3	73.0	143	121	140

Nominal Pipe Size		Outside Diameter		Center to End		Length
Inch.	mm	D	P	C	M	H
8 x 6	200 x 150	219.1	168.3	178	168	152
8 x 5	200 x 125	219.1	141.3	178	162	152
8 x 4	200 x 100	219.1	114.3	178	156	152
8 x 3 1/2	200 x 90	219.1	101.6	178	152	152
10 x 8	250 x 200	273.1	219.1	216	203	178
10 x 6	250 x 150	273.1	168.1	216	194	178
10 x 5	250 x 125	273.1	141.3	216	191	178
10 x 4	250 x 100	273.1	114.3	216	184	178
12 x 10	300 x 250	323.9	273.1	254	241	203
12 x 8	300 x 200	323.9	219.1	254	229	203
12 x 6	300 x 150	323.9	168.3	254	219	203
12 x 5	300 x 125	323.9	141.3	254	216	203
14 x 12	350 x 300	355.6	323.9	279	270	330
14 x 10	350 x 250	355.6	273.1	279	257	330
14 x 8	350 x 200	355.6	219.1	279	248	330
14 x 6	350 x 150	355.6	168.3	279	238	330
16 x 14	400 x 350	406.4	355.6	305	305	356
16 x 12	400 x 300	406.4	323.9	305	295	356
16 x 10	400 x 250	406.4	273.1	305	283	356
16 x 8	400 x 200	406.4	219.1	305	273	356
16 x 6	400 x 150	406.4	168.3	305	264	356
18 x 16	450 x 400	457.0	406.4	343	330	381
18 x 14	450 x 350	457.0	355.6	343	330	381
18 x 12	450 x 300	457.0	323.9	343	321	381
18 x 10	450 x 250	457.0	273.1	343	308	381
18 x 8	450 x 200	457.0	219.1	343	298	381
20 x 18	500 x 450	508.0	457.0	381	368	508
20 x 16	500 x 400	508.0	406.4	381	356	508
20 x 14	500 x 350	508.0	355.6	381	356	508
20 x 12	500 x 300	508.0	323.9	381	346	508
20 x 10	500 x 250	508.0	273.1	381	333	508
20 x 8	500 x 200	508.8	219.1	381	324	508
22 x 20	550 x 500	559.0	508.0	419	406	508
22 x 18	550 x 450	559.0	457.0	419	394	508
22 x 16	550 x 400	559.0	406.4	419	381	508
22 x 14	550 x 350	559.0	355.6	419	381	508
22 x 12	550 x 300	559.0	323.9	419	371	508
24 x 10	550 x 250	559.0	273.1	419	359	508
24 x 22	600 x 550	610.0	559.0	432	432	508
24 x 20	600 x 500	610.0	508.0	432	432	508
24 x 18	600 x 450	610.0	457.0	432	419	508
24 x 16	600 x 400	610.0	406.4	432	406	508
24 x 14	600 x 350	610.0	355.6	432	406	508
24 x 12	600 x 300	610.0	323.9	432	397	508
24 x 10	600 x 250	610.0	273.1	432	384	508



DIMENSIONS OF CLASS 150 FLANGS AS PER ANSI B 16.5



N.B.	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	T	No. of Holes
15	89	11.1	1.6	35	16	30	22.4	9.5	21.3	-	48	16	16	230	60.3	3.0	159	4
20	98	12.7	1.6	43	16	38	27.7	11.0	26.7	-	52	16	16	280	69.8	3.0	159	4
25	108	14.3	1.6	51	17	49	34.5	12.5	33.4	-	56	17	17	350	79.4	3.0	159	4
32	117	15.9	1.6	64	21	59	43.2	14.5	42.2	-	57	21	21	435	88.9	5.0	15.9	4
40	127	17.5	1.6	73	22	65	49.5	16.0	48.3	-	62	22	22	500	98.4	6.5	15.9	4
50	152	19.0	1.6	92	25	78	62.0	17.5	60.3	-	64	25	25	625	120.6	8.0	19.0	4
65	178	22.2	1.6	105	29	90	74.7	19.0	73.0	-	70	29	29	755	139.7	8.0	19.0	4
80	190	23.8	1.6	127	30	108	90.7	20.5	88.9	-	70	30	30	915	152.4	9.5	19.0	8
90	216	23.8	1.6	140	32	122	103.4	-	101.6	-	71	32	32	1040	177.8	9.5	19.0	8
100	229	23.8	1.6	157	33	135	116.1	-	114.3	-	76	33	33	1170	190.5	11.0	19.0	8
125	254	23.8	1.6	186	37	164	143.8	-	141.3	-	89	37	37	1450	215.9	11.0	22.2	8
150	279	25.4	1.6	216	40	192	170.7	-	168.3	-	89	40	40	1710	241.3	12.5	22.2	8
200	343	28.6	1.6	270	44	246	221.5	-	219.1	-	102	44	44	2220	293.4	12.5	22.2	8
250	406	30.2	1.6	324	49	305	276.4	-	273.0	-	102	49	49	2770	362.0	12.5	25.4	12
300	483	31.8	1.6	381	56	365	327.2	-	323.9	-	114	56	56	3280	431.8	12.5	25.4	12
350	533	34.9	1.6	413	57	400	359.2	-	355.6	-	127	57	79	3600	476.2	12.5	28.6	12
400	597	36.5	1.6	470	64	457	410.5	-	406.4	-	127	64	87	411.0	539.8	12.5	28.6	16
450	635	39.7	1.6	533	68	505	461.8	-	457.2	-	140	68	97	4620	577.8	12.5	31.8	16
500	698	42.9	1.6	584	73	559	513.1	-	508.0	-	144	73	103	5140	635.0	12.5	31.8	20
600	813	47.6	1.6	692	83	664	616.0	-	609.6	-	152	83	111	6160	749.3	12.5	34.9	20

DIMENSIONS OF CLASS 300 FLANGS AS PER ANSI B 16.5

N.B.	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R	T	No. of Holes
15	95	14.3	1.6	35	22	38	22.4	9.5	21.3	23.5	52	16	22	23.0	66.7	3.0	15.9	4
20	117	15.9	1.6	43	25	48	27.7	11.0	26.7	29.0	57	16	25	28.0	82.6	3.0	19.0	4
25	124	17.5	1.6	51	27	54	34.5	12.5	33.4	36.0	62	17	27	35.0	88.9	3.0	19.0	4
32	133	19.0	1.6	64	27	64	43.2	14.5	42.2	44.5	65	21	27	43.5	98.4	5.0	19.0	4
40	156	20.6	1.6	73	30	70	49.5	16.0	48.3	50.5	68	22	30	50.0	114.3	6.5	22.2	4
50	165	22.2	1.6	92	33	84	62.0	17.5	60.3	63.5	70	29	33	62.5	127.0	8.0	19.0	8
65	190	25.4	1.6	105	38	100	74.7	19.0	73.0	76.0	76	32	38	75.5	149.2	8.0	22.2	8
80	210	28.6	1.6	127	43	117	90.7	20.5	88.9	92.0	79	32	43	91.5	168.3	9.5	22.2	8
90	229	30.2	1.6	140	44	133	103.4	-	101.6	105.0	81	37	44	104	184.2	9.5	22.2	8
100	254	31.8	1.6	157	48	146	116.1	-	114.3	118.0	86	37	48	117.0	200.0	11.0	22.2	8
125	279	34.9	1.6	186	51	178	143.8	-	141.3	145.0	98	43	51	145.0	235.0	11.0	22.2	8
150	318	36.5	1.6	216	52	206	170.7	-	168.3	171.0	98	46	52	171.0	269.9	12.5	22.2	12
200	381	41.3	1.6	270	62	260	221.5	-	219.1	222.0	111	51	62	222.0	330.2	12.5	25.4	12
250	444	47.6	1.6	324	67	321	276.4	-	273.0	276.0	117	56	95	277.0	387.4	12.5	28.6	16
300	521	50.8	1.6	381	73	375	327.2	-	323.9	329.0	130	60	102	328.0	450.8	12.5	31.8	16
350	584	54.0	1.6	413	76	425	359.2	-	355.6	360.0	143	64	111	360.0	514.4	12.5	31.8	20
400	648	57.2	1.6	470	83	483	410.5	-	406.4	411.0	146	68	121	411.0	571.5	12.5	34.9	20
450	711	60.3	1.6	533	89	533	461.8	-	457.2	462.0	159	70	130	462.0	628.6	12.5	34.9	24
500	775	63.5	1.6	584	95	587	513.1	-	508.0	513.0	162	73	140	514.0	685.8	12.5	34.9	24
600	914	69.8	1.6	692	106	702	616.0	-	609.6	614.0	168	83	152	616.0	812.8	12.5	41.3	24

1) All dimensions are in Millimeters

2) Flanges except Lap Joint will be furnished with (1.6) Raised Face, which is included in "Thickness (C)" and "Length through Hub (Y)".

Weight of Flanges

150 LB PIPE FLANGES

N.B.		APPROXIMATE IN Kg				
Inches	Metric	Slip-on and Screwed	Socket Weld	Weld Neck	Blind	Lap Joint
1/2	15	.50	.50	.82	.82	.50
3/4	20	.91	.91	.82	.91	.91
1	25	.91	.91	1.00	1.00	.95
1 1/4	32	1.27	1.27	1.36	1.27	1.27
1 1/2	40	1.36	1.36	1.81	1.36	1.36
2	50	2.27	2.27	2.72	2.27	2.27
2 1/2	65	3.63	3.63	4.08	3.18	3.63
3	80	4.08	4.08	4.54	4.08	4.08
3 1/2	90	5.00		5.44	5.90	5.00
4	100	5.90		6.80	7.71	5.90

N.B.		APPROXIMATE IN Kg			
Inches	Metric	Slip-on and Screwed	Weld Neck	Blind	Lap Joint
5	125	6.80	8.62	9.07	6.80
6	150	8.62	10.89	11.79	8.62
8	200	13.61	17.69	20.41	13.61
10	250	19.50	23.59	31.75	19.50
12	300	29.03	36.29	49.90	29.03
14	350	35.38	49.90	59.42	47.63
16	400	42.18	63.50	77.11	63.50
18	450	54.43	68.04	94.80	72.57
20	500	72.12	81.65	123.40	88.45
24	600	95.25	117.93	186.40	124.74

300 LB PIPE FLANGES

N.B.		APPROXIMATE IN Kg				
Inches	Metric	Slip-on and Screwed	Socket Weld	Weld Neck	Blind	Lap Joint
1/2	15	.68	.68	.91	.91	.68
3/4	20	1.13	1.13	1.36	1.36	1.13
1	25	1.36	1.36	1.81	1.81	1.36
1 1/4	32	2.04	2.04	2.49	2.72	2.04
1 1/2	40	2.95	2.95	3.18	3.18	2.95
2	50	3.18	3.18	3.63	3.63	3.18
2 1/2	65	4.54	4.54	5.44	5.44	4.54
3	80	5.90	5.90	7.26	7.26	5.90
3 1/2	90	7.26		9.07	9.53	7.26
4	100	9.53		11.34	12.25	9.53

N.B.		APPROXIMATE IN Kg			
Inches	Metric	Slip-on and Screwed	Weld Neck	Blind	Lap Joint
5	125	11.79	15.42	15.88	11.79
6	150	15.88	20.41	22.68	15.88
8	200	24.49	31.75	36.74	24.49
10	250	34.93	44.91	57.61	34.93
12	300	49.90	64.41	83.46	63.50
14	350	74.39	84.37	107.10	86.18
16	400	99.79	111.60	139.30	113.40
18	450	127.00	138.40	176.90	133.80
20	500	147.40	171.50	223.20	167.80
24	600	222.30	247.20	342.00	249.50

600 LB PIPE FLANGES

N.B.		APPROXIMATE IN Kg				
Inches	Metric	Slip-on and Screwed	Socket Weld	Weld Neck	Blind	Lap Joint
1/2	15	1.27	1.27	1.36	.91	.68
3/4	20	1.36	1.36	1.59	1.36	1.13
1	25	1.59	1.59	1.81	1.81	1.36
1 1/4	32	2.04	2.04	2.27	2.72	2.04
1 1/2	40	2.95	2.95	3.63	3.63	2.95
2	50	3.63	3.63	4.54	4.54	3.18
2 1/2	65	5.44	5.44	6.35	6.30	4.54
3	80	6.80	6.80	8.16	9.07	5.90
3 1/2	90	9.53	-	11.79	13.15	7.26
4	100	14.97	-	16.78	18.06	9.53

N.B.		APPROXIMATE IN Kg			
Inches	Metric	Slip-on and Screwed	Weld Neck	Blind	Lap Joint
5	125	28.58	30.84	30.84	28.58
6	150	36.29	36.74	39.01	36.29
8	200	44.00	50.80	63.05	44.00
10	250	80.29	88.45	108.90	88.45
12	300	97.52	102.50	133.80	108.80
14	350	117.50	157.40	171.50	131.50
16	400	166.00	218.20	239.00	181.40
18	450	215.50	251.70	301.60	212.70
20	500	277.60	313.00	387.80	285.80
24	600	370.10	443.20	533.00	392.80

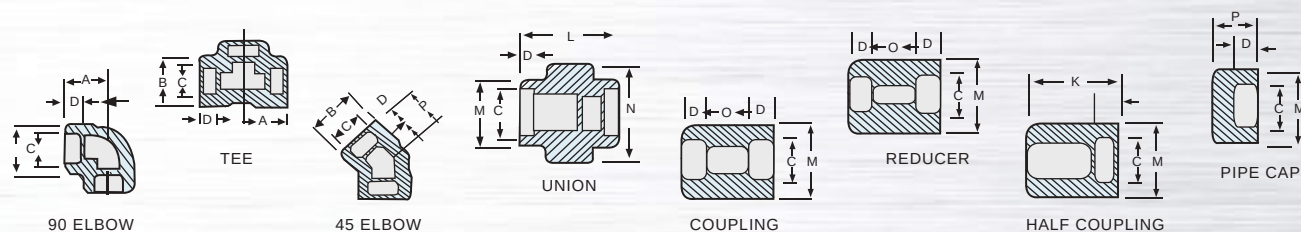
1500 LB PIPE FLANGES

N.B.		APPROXIMATE IN Kg				
Inches	Metric	Slip-on and Screwed	Socket Weld	Weld Neck	Blind	Lap Joint
1/2	15	1.27	1.27	1.36	.91	.68
3/4	20	1.36	1.36	1.59	1.36	1.13
1	25	1.59	1.59	1.81	1.81	1.36
1 1/4	32	2.04	2.04	2.27	2.72	2.04
1 1/2	40	2.95	2.95	3.63	3.63	2.95
2	50	3.63	3.63	4.54	4.54	3.18
2 1/2	65	5.44	5.44	6.35	6.30	4.54
3	80	6.80	6.80	8.16	9.07	5.90
3 1/2	90	9.53	-	11.79	13.15	7.26
4	100	14.97	-	16.78	18.06	9.53

N.B.		APPROXIMATE IN Kg			
Inches	Metric	Slip-on and Screwed	Weld Neck	Blind	Lap Joint
6	150	74.39	74.39	72.12	74.39
8	200	117.00	123.80	137.00	117.00
10	250	197.80	205.90	230.00	220.00
12	300	302.60	313.00	351.50	280.00
14	350	--	426.40	442.30	403.70
16	400	567.00	589.70	521.70	-
18	450	--	737.10	593.80	669.00
20	500	--	929.90	1009.30	805.20
24	600	--	1508.30	1644.40	1281.50

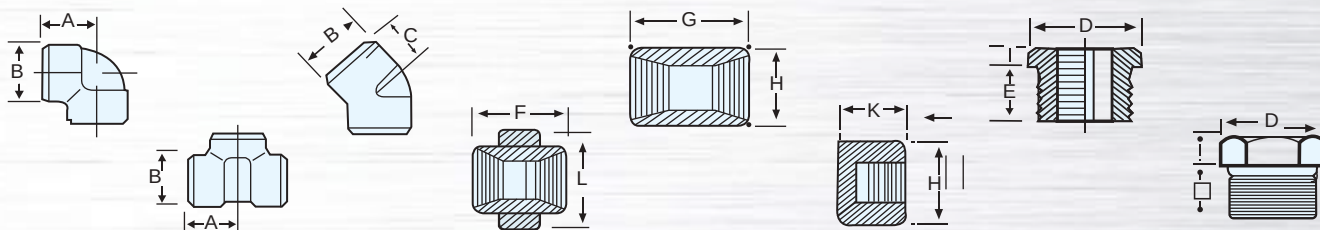


SOCKET WELD FITTING TO ANSI B-16.11



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

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



NOM BORE	PIPE O.D.	3000 LBS					COMMON FACTORS								6000 LBS				
		A	B	C	G	H	K	D	E	F	I	J	L	A	B	C	G	H	K
1/8"	10.3	21	22	17	32	16	19	11	10	40	-	6	-	25	25	19	32	22	-
1/4"	13.7	25	25	19	35	19	25	16	11	43	3	6	32	29	33	22	35	25	27
3/8"	17.2	29	33	22	38	22	25	17.5	13	48	4	8	38	33	38	25	38	32	27
1/2"	21.3	33	38	25	48	29	32	22	15	51	5	8	46	38	46	29	48	38	33
3/4"	26.7	38	46	29	51	35	37	27	16	57	6	10	51	44	56	33	51	44	38
1"	33.4	44	56	33	60	44	41	35	19	64	6	10	60	51	62	35	60	57	43
1 1/4"	42.2	51	62	35	67	57	44	44.5	21	70	7	14	72	60	75	43	67	64	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	65	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

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Our Valueable Clients



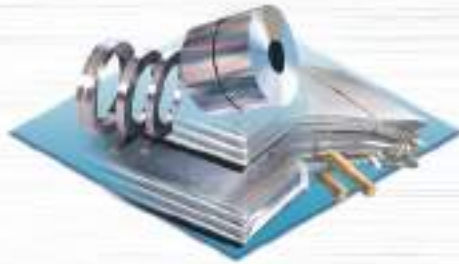
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