SUPERIOR STEEL OVERSEAS
SUPERIOR STEEL INDUSTRIES

Quality Products that build futuristic Engineering projects

Stainless Steel | Carbon Steel | Alloy Steel | Nickel Alloy

"Success"

It's time to taste success with us

Leaders don't follow path they make their way to success with unshakeable confidence and business Acumen. They pioneer a revolution and break all the rules to create new set of rules that becomes a bench mark to follow. One such leader in the making is "Superior Steel" a conscious effort that took birth in early nineties and continues it winning journey almost satisfactorily and has become an inspiration for many others who seek not only great but real success.

Superior is an initiative taken by a team of young entrepreneurs possessing required educational qualification, deep insight of business scenario and top of it all the right aptitude and attitude to ruffle many feathers in the Steel Industry.

Superior with all its strength has been growing, learning on each step, expanding organicaly and inorganically to cover every viable geographics to become today's real challenging company that offers complete solutions in the field of Manufacturing, Exporting, Stocking & supplying of entire range of Ferrous & Non Ferrous products like pipes, tubes, pipe fittings, flanges, rods, sheet, plate, coils, angle, channels etc.

Today for you and your business, our supplies stands tall once again to promote and expand industries in the Global market through understanding of your needs, promoting a dedicated and personalized service without compromising on quality and ethics.

Email : superiorsteel@vsnl.com / amehta@superiorsteel.in

"Deliver"

When everybody talk we only try to deliver - how?

Experience our expertise

Unparalled sourcing capability

On demand-supply capability

Business ethics

Experience our expertise

Expertise comes with experience and the same comes with deep understanding of the changing business scenario, technological innovation and relevance to the modern needs, better material management, cost effective manufacturing and variety of material options - Big and small each customer can benefit from our expertise.

Unparalled sourcing capability

Whether we make or we source it for you - the bottom line is you can entrust your requirement with us, even for hard to find materials - we literally search the globe, source the material and supply at the most competitive rates with less lead time.

On demand-supply capability

In today's highly demanding and time consuming projects even few days delay send your cost sky rocketing. Superior with the clear understanding of this fact keeps huge quantities of material at various strategic locations to reach & supply any material at least lead time to supply on demand.

Sound financial management & business ethics

Grand profits and sound balance sheet, we have achieved critical mass and financial stability to weather any reasonable storms without any disruption in company's bottom line. Actually we are proud to achieve this keeping our business ethics intact. Which many thinks impossible in today's time

When reliability matters "Trust Superior Quality".

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"Global Presence"

Now its time to make our presence more profound globally

Superior Steel Overseas seeks to build an international STANDARD that adapts to the culture of each market and country. Our attitude is open and receptive to everyone who works with us. We want to direct our efforts towards a new concept of the world by fostering sustainable advantages through proactive management of all our foreign operations.

Our forward-looking internationalisation aims to maximise competitiveness so as to respond effectively to an increasingly global market.

"Set your Target"

Now its time for you to set your target on us for various needs

PRODUCT RANGE

Flanges

Stainless Steel : ASTM A182 F304/ 304L/ 304H/ 316/ 316L/ 317/ 317L/ 321/ 310/ 347/ 904Letc.
Carbon Steel : ASTM A105/ A694F42/46/52/56/60/65/70/A350 LF3/A350 LF2, etc.
Alloy Steel : ASTM A182 F1/ F5/ F9/ F11/ F22/ F91 etc.
Types : Weldneck, Slipon, Blind, Socket Weld, Lap Joint, Spectacles, Ring Joint, Orifcae, Long Weldneck, Deck Flange, RTJ, Flange
Size : 1/2" NB TO 24" NB.
Class : 150#, 300#, 400#, 600#, 900#, 1500# & 2500#.

Screwed & Forged Fittings

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.
Alloy Steel : ASTM A182 F1/ F5/ F9/ F11/ F22/F91 etc.
Types : Elbow, Tee, Union, Cross, Coupling, Cap, 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#.

Butt Weld Fittings

Stainless Steel : ASTM A403 WP 304/ 304L/ 304H/316/ 316L/ 317/ 317L/ 321/ 310/ 347/904L etc.
Carbon Steel : ASTM A234 WPB/A420 WPL3/A420 WPL6/ MSS-SP-75 WPHY 42/46/52 /56/60/65/70
Alloy Steel : ASTM A234 WP1/ WP5/ WP9/ WP11/ WP22/WP91 etc.
Others : Monel, Nickel, Inconel, Hastelloy, Copper, Brass, Bronze, Titanium, Tantalum, Bismuth, Aluminium, High Speed Steel, Zinc, Lead, etc.
Types : Elbow, Tee, Reducer, Return Bends, Stub-Ends, Cap, Collar, Cross, Insert etc.
Size : 1/4" NB TO 32" NB. (Seamless & Welded)
Wall Thickness : Sch. 5S To Sch. XXS.

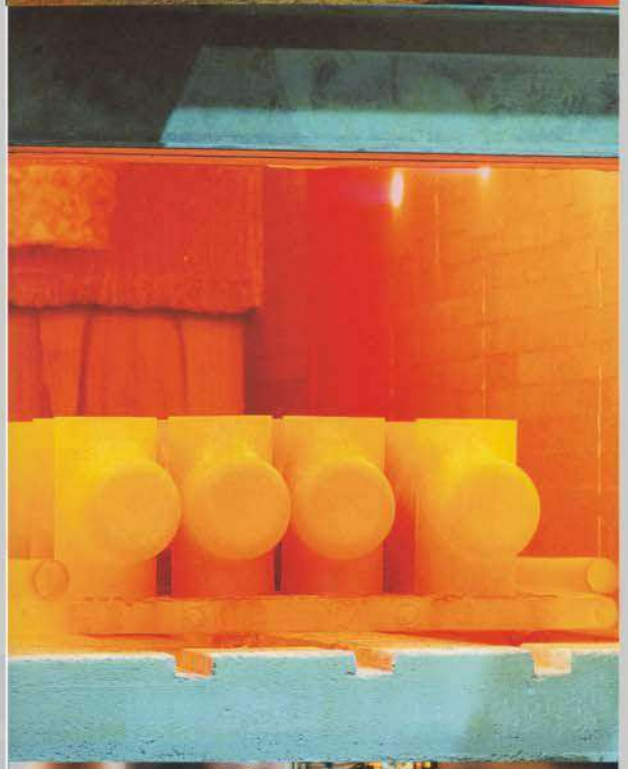
Pipes

Stainless Steel : ASTM A312 TP 304/ 304L/ 304H/ 316/ 316L/ 317/ 317L/ 321/310/ 347/ 904L etc.
Carbon Steel : ASTM A53 GR. B/ A106 GR. B/ API 5L GRADE B/ API 5L GR.X42/46/52/56/60/65/70/ Low Temperature, Carbon Steel: A333 Gr.3/ Gr.6 etc.
Alloy Steel : ASTM A335 GR. P1/ P5/ P9/ P11/ P22/ P91 etc.
Types : Round , Square, Rectangular.
Size : Upto 24" NB. (Seamless & Welded)
Wall Thickness : Sch. 5S to Sch. XXS

Sheets, Plates & Rods

Material Grade : Stainless Steel, Nickel Alloys, Carbon Steel, Alloy Steel, Other Ferrous & Non-Ferrous Metals.
Types : Sheet, Plates, Strips, Round Bars, Wires, Channel, etc.

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



» Manufacturing of

Email : superiorsteel@vsnl.com / amehta@superiorsteel.in

Superior Steel is one of the leading firm engaged in Manufacturing & Exporting large variety of Butt-Welding Fittings, Forged Pipe-Fittings & Flanges in Stainless Steel, Carbon Steel, Alloy Steel, Nickel/Super Alloys & many other Ferrous / Non-Ferrous Metals.

We have complete facilities for manufacturing of Butt-Welding Forged Fittings & Flanges. For producing the above we have Hot Forging, Cold Forging, Bending, Pressing, Welding, Grinding, Hammering, Machining, Drilling, Furnace, Gauging, Handling, Hyrdraulic Testing, Heat Treatment, Annealing, Shot Blasting, Pickling & Passivation, Anti Rust Coating & Packing Facilities.

Superior Steel has been setup to produce all types of Fittings & Flanges as per National/International standards and as per customer's special requirements/ specifications/drawings for application in Refineries, Petrochemicals, Chemicals, Oil & Gas, Fertilizers, Pharmaceuticals, Food & Beverages, Sugar, Paper, Power, Shipbuilding, Aerospace, Engineering, Nuclear, Defence, Research Centers etc.

Every manufacturing phase, from forging to welding, machining to testing, is carried out with a vast array of modern equipment and machinery. Each material is controlled through out the manufacturing phases, thanks to rigorous QA & QC procedures and external chemical & mechanical laboratories well equipped to perform both destructive & non-destructive examinations. We provide original Material Test Certificates, Government approved Laboratory Test Certificates, Third Party Inspection Certificates and Guarantee/Warranty Certificates for the supplies.

The mission of **Superior Steel Overseas**, is to provide the best customer service by supplying materials with the most up-to-date technology, respecting the agreed delivery date, monitoring the progress of the work and satisfying urgent requirements, thanks to our large inventory of raw materials, semi-finished and finished products.

Our customers are end-users, fabricators and distributors around the world. Our mission is to be always able to represent for our customers a reference for reliability, competence and service. We build relationships with our customers, which last and contribute to their success, because we know that their success is our success.

Pipe Fittings & Flanges »




www.superiorsteelindustries.com, www.flangesfittings.com

भारत सरकार
GOVERNMENT OF INDIA
वाणिज्य एवं उद्योग मंत्रालय
MINISTRY OF COMMERCE & INDUSTRY
कार्यालय, मंडलीय संयुक्त महानिदेशक, विदेश व्यापार
OFFICE OF THE ZONAL JOINT DIRECTOR GENERAL OF FOREIGN TRADE

मान्यता प्रमाण पत्र
Certificate of Recognition

निर्यात सदन
EXPORT HOUSE
STATUS HOLDER No.:03/14/ZA/0430/100625

मैसर्स .....

(आई ई सी सं. ..... और आयकर पैन सं. .....)

को विदेश व्यापार नीति, 2009-2014 के प्रावधानों के अनुसार निर्यात सदन का स्तर प्रदान किया जाता है। यह प्रमाण पत्र 1 अप्रैल ..... से 31 मार्च ..... तक ..... वर्षों की अवधि के लिए वैध है।

M/s SUPERIOR STEEL INDUSTRIES MARDIA BHAVAN 6TH KHETWADI LANE MUMBAI MAHARASHTRA 400004

(IEC No. 0397028776 and Income Tax PAN No. AFVPM4916M) are hereby accorded the status of Export House in accordance with the provisions of the Foreign Trade Policy, 2009-2014. This Certificate is valid for a period of Five years, effective from 1st April 2009 to 31st March 2014

सं./No. ZA/0430

तारीख/Date : 25.06.2010

स्थान/Place : Mumbai

(फाईल सं./File No.) 03/89/105/00131/AM10/

Shailesh Singh
मंडलीय संयुक्त महानिदेशक, विदेश व्यापार
Zonal Joint Director General of Foreign Trade

Quality Policy

- Customer Satisfaction
- Complete Chain Management
- Quality Systems
- Quality and Safety Management Skills.
- Sense of Responsibility
- Motivation and Encouragement
- Continuing Suitability

"Quality" Policy

Quality is our prime concern. We are able to maintain high quality standards through our committed personnel and sound intrastructure. We ensure that finest quantity material is used for our products.

To ensure the quality of each material, we are providing Materials Test Certificate along with supply.

Our team of experts maintain a vigil on the quality of the products. Every single piece is attached with test certificates and reports. We are continually improving our quality to serve our clients better.

Certificate

Standard **ISO 9001:2008**

Certificate Regist. No. **85 100 001 09366/02**

TÜV Rheinland India Pvt. Ltd.:

Certificate Holder **Superior Steel Overseas**

Mardia Bhavan, 6th Khetwadi Lane,
Mumbai – 400 004, India

Scope: **Exporters of Flanges, Pipe Fittings, Pipes, Plates, Sheets, Valves, Fasteners, O'lets, Tube Fittings & other Piping Accessories in Nickel Alloys, Alloy Steel, Stainless Steel & Carbon Steel etc.**

An audit was performed, Report No. 09366. Proof has been furnished that the requirements according to ISO 9001:2008 are fulfilled.

The due date for all future audits is 31-07 (dd.mm).

Validity: The certificate is valid from **2009-10-07 until 2012-04-28.**

Bangalore, 2009-10-13 — The Certification Body of TÜV Rheinland India Pvt. Ltd.

www.tuv.com

TÜVRheinland®
Precisely Right.

CERTIFICATE OF REGISTRATION

ENVIRONMENTAL MANAGEMENT SYSTEM ISO 14001

ISO 14001:2004

THIS IS TO CERTIFY THAT THE
ENVIRONMENTAL MANAGEMENT SYSTEM OF

Superior Steel Overseas

Mardia Bhavan,
6th Khetwadi Lane,
Mumbai - 400 004
Maharashtra, INDIA

Has been assessed and registered as complying with the requirements of the International Standard shown above for the following Goods and Services:-

Exporters Of Flanges, Pipe Fittings, Pipes, Plates Sheets, Valves, Fasteners, O'lets, Tube Fittings, And Other Piping Accessories In Nickel Alloys, Alloy Steel, Stainless Steel And Carbon Steel.

Registration Number: EMS/R91/1850
Registration Date: 11/Mar/2010
Expiry Date: 11/Mar/2013
Serial Number EMS 0111

Mr. Tony Wilde
Managing Director
ISC Pty Ltd, A.B.N. 31 085 846 984
Sydney, AUSTRALIA

International Standards Certifications Pty. Ltd.

JAS-ANZ
Accredited by the Joint Accreditation System of Australia and New Zealand
www.jas-anz.com.au/register

ISC Pty Ltd., Unit 2/10 Gladstone Road, Castle Hill NSW 2154 Sydney Australia

CERTIFICATE OF REGISTRATION

SAFETY ASSURED COMPANY AS 4801

OHSAS 18001:2007

THIS IS TO CERTIFY THAT THE
OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM OF

Superior Steel Overseas

Mardia Bhavan,
6th Khetwadi Lane,
Mumbai - 400 004
Maharashtra, INDIA

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Exporters Of Flanges, Pipe Fittings, Pipes, Plates Sheets, Valves, Fasteners, O'lets, Tube Fittings, And Other Piping Accessories In Nickel Alloys, Alloy Steel, Stainless Steel And Carbon Steel.

Registration Number: OHS/R91/1850
Registration Date: 11/Mar/2010
Expiry Date: 11/Mar/2013
Serial Number OHS 0040

Mr. Tony Wilde
Managing Director
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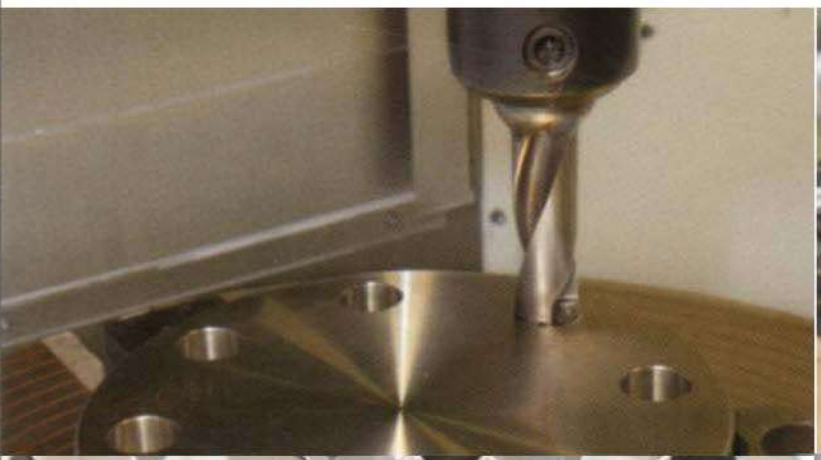
ISC Pty Ltd., Unit 2/10 Gladstone Road, Castle Hill NSW 2154 Sydney Australia

Manufacturer of Flanges & Forged Fittings:

We are engaged in Manufacturing & Exporting a vast assortment of products like flanges & forged fittings in carbon steel, stainless steel, alloys steel, nickel alloys and other ferrous and non ferrous metals .

Flanges : We manufacture different types of flanges like Weld Neck, Slip on, Blind, Threaded, Socket Weld, Lap Joint, Orifice Flanges, Ring, and custom flanges in sizes from 1/2" to 60" in pressure classes - 75, 125, 150, 175, 250, 300, 350, 400, 600, 900, 1500, 2500 as per NACE and other standard specifications.

Forged Fittings : We manufacture different type of forged fittings like Elbow, Tee, Coupling, Cross, Union, Caps, etc in 3000 LBS, 6000 LBS & 9000LBS as per NACE and other specifications.



ASTM A105/A 105M Forged Socket Weld, Screwed, Flanges, Carbon Steel Pipe Fittings

ASTM GRADE	C	Mn	Si	S	P	Cr	Ni	Mo	Other	Tensile Psi(Mpa)	Psi Yield (MPa)	Elangation %	Hardness	Redu in Area
A 105/105M	0.35 max	0.60 1.05	0.35 max	0.50 max	0.04 max	-	-	-	-	70000 485	36000 (250)	30-strip 22-Round	187 HB max	30 Round
A 182c1160&170 30000(20.29)	0.08 max	1.10 max	0.32 max	0.35min 0.50max	0.05 max	- -	- -	- -	- -	Cl.70-70000(49.46) Cl.60-60000(42.32)	30000 (200)	22	-	35

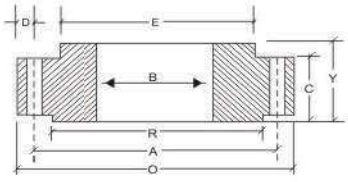
ASTM A182/A 182M Austentic, Stainless Steel Forged (SW), Screwed, Flanges, for High Temps. Service

A182/182M F 304	0.08 max	2.00 max	1.00 max	0.03 max	0.04 max	18.0 20.0	8.0 11.0	-	-	75000 (515)	30000 (205)	30		50
A 182/182M F 304L	0.035 max	2.00 max	1.00 max	0.03 max	0.04 max	18.0 20.0	8.0 13.0	-	-	70000 (485)	25000 (170)	30	223	50
A182/182M F 316	0.08 max	2.00 max	1.00 max	0.03 max	0.04 max	16.0 18.0	10.0 14.0	2.0 3.0	-	75000 (515)	30000 (205)	30(Long) 25(Trans)	-	50(Long) 45(Trans)
A182/182M F 316L	0.035 max	2.00 max	1.00 max	0.03 max	0.04 max	16.0 18.0	10.0 15.0	2.0 3.0	-	70000 (485)	25000 (170)	30	-	50
A182/182M F 316 H	0.04 0.10	2.00 max	1.00 max	0.03 max	0.04 max	16.0 18.0	10.0 14.0	2.0 3.0	-	75000 (515)	30000 (205)	30	-	50
A182/182M F 321	0.08 max	2.00 max	1.00 max	0.03 max	0.04 max	17.0 min.	9.0 12.0	-	Tixc= 0.70 max	75000 (515)	30000 (205)	30	-	50
A182/182M F 310	0.15 max	2.00 max	1.00 max	0.03 max	0.04 max	24.0 26.0	19.0 22.0	-	-	75000 (515)	30000 (205)	30	-	50
A182/182M F 317L	0.030 max	2.00 max	1.00 max	0.03 max	0.045 max	18.0 20.0	11.0 15.0	3.00 4.0	-	70000 (485)	25000 (170)	30	-	50 50
A182/182M F347H	0.04 0.10	2.00 max	1.00 max	0.03 max	0.04 max	17.0 20.0	9.0 13.0		Cb+Ta= 8.0=1.10	75000 (515)	30000 (205)	30	-	50

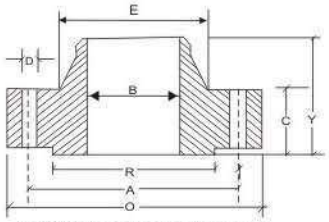
ASTM A182/A 182M Forged Alloy Steel,(SW), Screwed, Flanges, for High Temperature Service

A182/182M F1	0.28 max	0.60 0.90	0.15 0.35	0.045 max	0.045 max		-	0.44 0.65	-	70000 (485)	40000 (275)	20	143-192 Brenell Hrdn.	30
A182/182M F12 class2	0.10 0.20	0.30 0.80	0.10 0.60	0.04 max	0.04 max	0.80 1.25	-	0.44 0.65	-	70000 (485)	40000 (275)	20	143-207	30
A182/182M F11 class2	0.10 0.20	0.30 0.80	0.50 1.0	0.04 max	0.04 max	1.0 1.50	-	0.44 0.65	-	70000 (485)	40000 (275)	20	143-207	30
A182/182M F22 class 3	0.05 0.15	0.30 0.60	0.5 max	0.04 max	0.04 max	2.0 2.50	-	0.87 1.13	- -	75000 (515)	45000 (310)	20	156-207	30
A182/182M F5	0.15 max	0.30 0.60	0.50 max	0.03 max	0.03 max	4.0 6.0	0.5 max	0.44 0.65	-	70000 (485)	40000 (275)	20	143-217	35
A182/182M F9	0.15 max	0.30 0.60	0.5 1.00	0.03 max	0.03 max	8.0 10.0	-	0.90 1.10	-	85000 (585)	55000 (386)	20	179-217	40

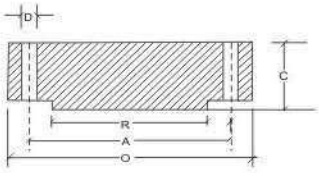
Dimensions of Forged Flanges as per ANSI B 16.5



SLIP-ON FLANGE



WELDING NECK FLANGE



BLIND FLANGE

DIMENSIONS OF CLASS 150 FLANGES AS PER ANSI B 16.5

Nominal Pipe Size		Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Lenght through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
								S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	(INCH.)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
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

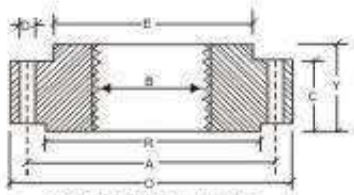
All Dimensions are in Millimeters ● Flanges except Lap Joint will be furnished with (1.6mm) Raised Face, which is included in Thickness(C) and Lenght through Hub(Y).

DIMENSIONS OF CLASS 300 FLANGES AS PER ANSI B 16.5

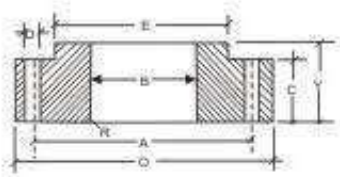
Nominal Pipe Size		Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Lenght through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
								S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	(INCH.)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	1/2	95.2	66.7	15.9	4	14.3	38.1	22.2	52.4	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 (1.6mm) Raised Face, which is included in Thickness(C) and Lenght through Hub(Y).

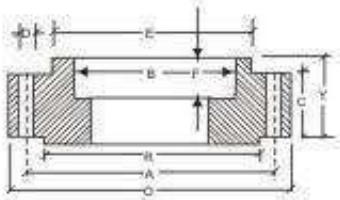
Dimensions of Forged Flanges ANSI B 16.5



THREADED FLANGES



LAP JOINT FLANGES



SOCKET WELD FLANGES

DIMENSIONS OF CLASS 600 FLANGES AS PER ANSI B 16.5

Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Lenght through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
							S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	95.2	66.7	15.9	4	14.3	38.1	22.2	52.4	22.3	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

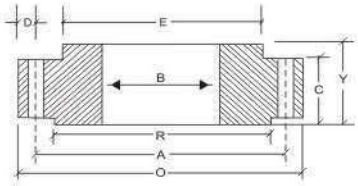
All Dimensions are in Millimeters ● Flanges except Lap Joint will be furnished with(6.35mm) Raised Face, which is not included in Thickness(C) and Lenght through Hub(Y).

DIMENSIONS OF CLASS 900 FLANGES AS PER ANSI B 16.5

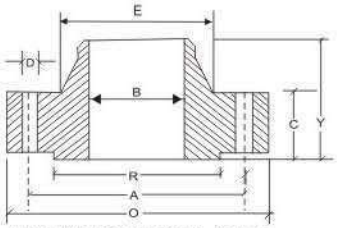
Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Lenght through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
							S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	120.6	82.5	22.2	4	22.2	38.1	31.7	60.3	31.7	22.3	22.8	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(6.35mm) Raised Face, which is not included in Thickness(C) and Length through Hub(Y).

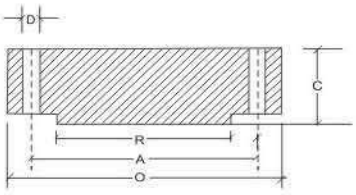
Dimensions of Forged Flanges ANSI B 16.5



SLIP-ON FLANGE



WELDING NECK FLANGE



BLIND FLANGE

Dimensions of Class1500 Flanges As Per ANSI B 16.5

Nominal Pipe Size		Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Lenght through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
								S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	(INCH.)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	1/2	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	3/4	130.2	88.9	22.2	4	25.4	44.4	34.9	69.8	34.9	27.7	28.1	42.9	11.1	26.67
25	1	149.2	101.6	25.4	4	28.6	52.4	41.3	73.0	41.3	34.5	35.0	50.8	12.7	33.40
32	1 1/4	158.7	111.1	25.4	4	28.6	63.5	41.3	73.0	41.3	43.2	43.6	63.5	14.2	42.16
40	1 1/2	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	2	215.9	165.1	25.4	8	38.1	104.8	57.1	101.6	57.1	62.0	62.0	92.1	17.4	60.31
65	2 1/2	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	3	266.7	203.2	31.7	8	47.6	133.3	73.0	117.5	73.0	90.7	91.4	127.0	-	88.90
100	4	311.1	241.3	34.9	8	54.0	161.9	90.5	123.0	90.4	116.1	116.8	157.2	-	114.30
125	5	374.6	292.1	41.3	8	73.0	196.8	104.8	155.6	104.8	143.8	144.5	185.7	-	141.30
150	6	393.7	317.5	38.1	12	82.6	228.6	119.1	171.4	119.1	170.7	171.4	215.9	-	168.27
200	8	482.6	393.7	44.4	12	92.1	292.1	142.9	212.7	142.8	221.5	222.2	269.9	-	219.07
250	10	584.2	482.6	50.8	12	107.9	368.3	158.7	254.0	177.8	276.3	277.3	323.8	-	273.05
300	12	673.1	571.5	54.0	16	123.8	450.8	181.0	282.5	218.9	327.1	328.1	381.0	-	323.85

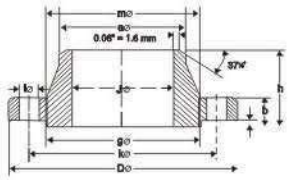
All Dimensions are in Millimeters ● Flanges except Lap Joint will be furnished with(6.35mm) Raised Face, which is not included in Thickness(C) and Lenght through Hub(Y).

Dimensions of Class 2500 Flanges As Per ANSI B 16.5

Nominal Pipe Size		Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Lenght through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
								S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	(INCH.)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	1/2	133.3	88.9	22.2	4	30.2	42.9	39.7	73.0	39.7	22.3	22.3	34.9	-	21.33
20	3/4	139.7	95.3	22.2	4	31.7	50.8	42.9	79.4	42.9	27.7	27.7	42.9	-	26.67
25	1	158.7	107.9	25.4	4	34.9	57.1	47.7	88.9	47.7	34.5	34.5	50.8	-	33.40
32	1 1/4	184.1	130.2	28.6	4	38.1	73.0	52.4	95.2	52.4	43.2	43.2	63.5	-	42.16
40	1 1/2	203.2	146.0	31.7	4	44.4	79.4	60.3	111.1	60.3	49.5	49.5	73.0	-	48.26
50	2	234.9	171.4	28.6	8	50.8	95.2	69.8	127.0	69.8	62.4	62.0	92.1	-	60.31
65	2 1/2	266.7	196.8	31.7	8	57.1	114.3	79.4	142.9	79.4	74.7	74.7	104.8	-	73.02
80	3	304.8	228.6	34.9	8	66.7	133.3	92.1	168.3	92.1	90.7	90.7	127.0	-	88.90
100	4	355.6	273.0	41.2	8	76.2	165.1	107.9	190.5	107.9	116.1	116.1	157.2	-	114.30
125	5	419.1	323.8	47.6	8	92.1	203.2	130.0	228.6	130.0	143.8	143.8	185.7	-	141.30
150	6	482.6	368.3	54.0	8	107.9	234.9	152.4	273.0	152.4	170.7	170.7	215.9	-	168.27
200	8	552.4	438.1	54.0	12	127.0	304.8	177.8	317.5	177.8	221.5	221.5	269.9	-	129.07
250	10	673.1	539.7	66.7	12	165.1	374.6	228.6	419.1	228.6	276.3	276.3	323.8	-	273.05
300	12	762.0	619.1	73.0	12	184.1	441.3	254.0	463.5	254.0	327.1	327.1	381.0	-	323.85

All Dimensions are in Millimeters I Flanges except Lap Joint will be furnished with(6.35mm) Raised Face, which is not included in Thickness(C) and Lenght through Hub(Y).

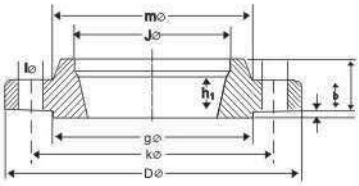
Welding Neck Flanges Dimensional Tolerances



ANSI B 16.5

D	Outside Diameter	When OD is 24" or less When OD is over 24"	+ 0.06" +0.12"	+ 1.6 mm +3.2 mm
J	Inaide Diarneter	10" and smaller -0.03" 12" to 18" 20" and arger	 -0.06" -0.12" 0.06" -0.8 mm -1.6 mm +3.2mm -1.6 mm	
g	Diameter of Contact face	0.03" Raised Face 0.25" Raised Face Tongue and Groove, Male and Female	+0.03' +0.02" +0.02"	+0.8 mm +0.5 mm +0.5 mm
a	Diameter of Hub at Point of Welding	5" and smaller 6" and larger	 +0.16" - 0.03" +2.4 mm - 0.8 mm +4.0 mm - 0.8 mm	+0.09" - 0.03"
D	Diameter of Hub at Base_	When Hub Base is 24" or less When OD is over 24"	+0.06" +0.12"	+1.6 mm +3.2 mm
I	Drilling and Facing	Bolt Circle Diameter k+0.06" Center-to-center of adjacent bolt holes Max. eccentricity between bolt circle dia.k and machined facing diameters: sizes 2-1/2" and smaller sizes 3" Bro larger	+1.6 mm +0.03" 0.03" 0.06"	 +0.8 mm 0.8 mm 1.6 mm
h	Over all Length of Hub	10" and smaller +0.06" 12" and larger	 +0.12"	+1.6 mm +3.2 mm
b	Thickness	18" and smaller +0.12" 20" and larger	+3.2 mm +0.19"	 +4.8 mm

Lap joint, Threaded and Blind Flanges Dimensional Tolerance

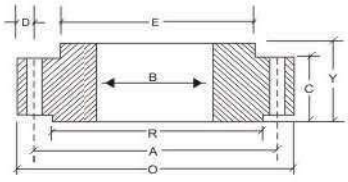


ANSI B 16.5

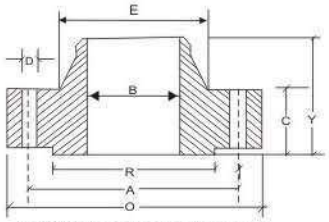
D	Outside Diameter	When OD is 24" or less When OD is over 24"	+ 0.06" +0.12"	+ 1.6 mm +3.2 mm
J1,2,3	Inside Diameter	Slip-on and Lap Joint 10" and smaller 12" and larger Threaded	+0.0.3" +0.06" Within limits on boring gauge	+0.8 mm +1.6 mm
g	Diameter of Counterbore Diameter of Contact Face	Same as for inside Diameter 0.03" Raised Face 0.25" Raised Face Tongue and Groove, Male and Female	 +0.03" +0.02" +0.02" not for flanges with ring joint	 +0.8 mm +0.5 mm +0.5 mm
m	Outside Diameter of Hub1)	12" and smaller 14" and larger	+0.09" - 0.06" +0.12" +2.4 mm - 1.6 mm +3.2 mm	
I	Drilling and Facing	Bolt Circle Diameter k Center-to-center of adjacent bolt holes Max. eccentricity between bolt circle dia. k and machined facing diameters: sizes 2-1/2" and smaller sizes 3" and	+0.06" +0.03" 0.03" 0.06"	+1.6 mm +0.8 mm 0.8 mm 1.6 mm
L1,2,3	Over all Length of Hub	18" and smaller 20" and larger	+0.12" - 0.03" +0.19" - 0.03" +3.2 mm - 0.8 mm +4.8 mm - 1.6 mm	
b	Thickness	18" and smaller 20" and larger	+0.12" +0.19"	+3.2 mm +4.8 mm

1) This tolerance is not covered by ANSI B 16.5

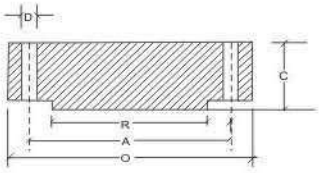
Dimensions of Forged Flanges as per ANSI B 16.5



SLIP-ON FLANGE



WELDING NECK FLANGE



BLIND FLANGE

DIMENSIONS OF CLASS 150 FLANGES AS PER ANSI B 16.5

Nominal Pipe Size		Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Lenght through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
								S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	(INCH.)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
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

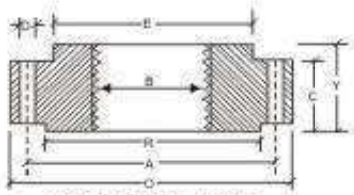
All Dimensions are in Millimeters ● Flanges except Lap Joint will be furnished with (1.6mm) Raised Face, which is included in Thickness(C) and Lenght through Hub(Y).

DIMENSIONS OF CLASS 300 FLANGES AS PER ANSI B 16.5

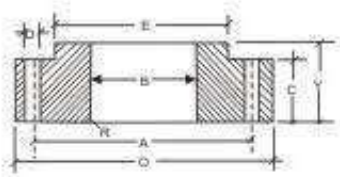
Nominal Pipe Size		Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Lenght through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
								S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	(INCH.)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	1/2	95.2	66.7	15.9	4	14.3	38.1	22.2	52.4	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 (1.6mm) Raised Face, which is included in Thickness(C) and Lenght through Hub(Y).

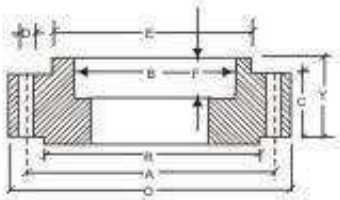
Dimensions of Forged Flanges ANSI B 16.5



THREADED FLANGES



LAP JOINT FLANGES



SOCKET WELD FLANGES

DIMENSIONS OF CLASS 600 FLANGES AS PER ANSI B 16.5

Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Lenght through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
							S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	95.2	66.7	15.9	4	14.3	38.1	22.2	52.4	22.3	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

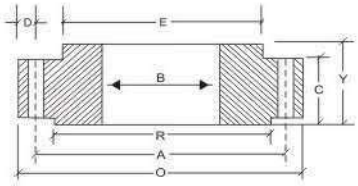
All Dimensions are in Millimeters ● Flanges except Lap Joint will be furnished with(6.35mm) Raised Face, which is not included in Thickness(C) and Lenght through Hub(Y).

DIMENSIONS OF CLASS 900 FLANGES AS PER ANSI B 16.5

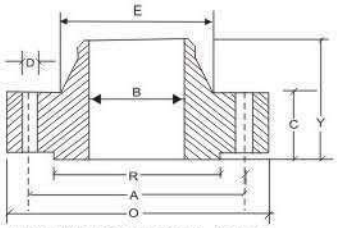
Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Lenght through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
							S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	120.6	82.5	22.2	4	22.2	38.1	31.7	60.3	31.7	22.3	22.8	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(6.35mm) Raised Face, which is not included in Thickness(C) and Length through Hub(Y).

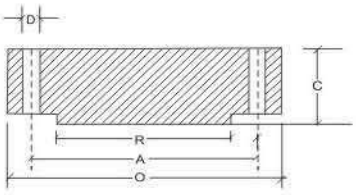
Dimensions of Forged Flanges ANSI B 16.5



SLIP-ON FLANGE



WELDING NECK FLANGE



BLIND FLANGE

Dimensions of Class1500 Flanges As Per ANSI B 16.5

Nominal Pipe Size		Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Lenght through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
								S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	(INCH.)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	1/2	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	3/4	130.2	88.9	22.2	4	25.4	44.4	34.9	69.8	34.9	27.7	28.1	42.9	11.1	26.67
25	1	149.2	101.6	25.4	4	28.6	52.4	41.3	73.0	41.3	34.5	35.0	50.8	12.7	33.40
32	1 1/4	158.7	111.1	25.4	4	28.6	63.5	41.3	73.0	41.3	43.2	43.6	63.5	14.2	42.16
40	1 1/2	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	2	215.9	165.1	25.4	8	38.1	104.8	57.1	101.6	57.1	62.0	62.0	92.1	17.4	60.31
65	2 1/2	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	3	266.7	203.2	31.7	8	47.6	133.3	73.0	117.5	73.0	90.7	91.4	127.0	-	88.90
100	4	311.1	241.3	34.9	8	54.0	161.9	90.5	123.0	90.4	116.1	116.8	157.2	-	114.30
125	5	374.6	292.1	41.3	8	73.0	196.8	104.8	155.6	104.8	143.8	144.5	185.7	-	141.30
150	6	393.7	317.5	38.1	12	82.6	228.6	119.1	171.4	119.1	170.7	171.4	215.9	-	168.27
200	8	482.6	393.7	44.4	12	92.1	292.1	142.9	212.7	142.8	221.5	222.2	269.9	-	219.07
250	10	584.2	482.6	50.8	12	107.9	368.3	158.7	254.0	177.8	276.3	277.3	323.8	-	273.05
300	12	673.1	571.5	54.0	16	123.8	450.8	181.0	282.5	218.9	327.1	328.1	381.0	-	323.85

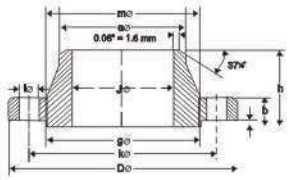
All Dimensions are in Millimeters ● Flanges except Lap Joint will be furnished with(6.35mm) Raised Face, which is not included in Thickness(C) and Lenght through Hub(Y).

Dimensions of Class 2500 Flanges As Per ANSI B 16.5

Nominal Pipe Size		Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Lenght through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
								S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	(INCH.)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	1/2	133.3	88.9	22.2	4	30.2	42.9	39.7	73.0	39.7	22.3	22.3	34.9	-	21.33
20	3/4	139.7	95.3	22.2	4	31.7	50.8	42.9	79.4	42.9	27.7	27.7	42.9	-	26.67
25	1	158.7	107.9	25.4	4	34.9	57.1	47.7	88.9	47.7	34.5	34.5	50.8	-	33.40
32	1 1/4	184.1	130.2	28.6	4	38.1	73.0	52.4	95.2	52.4	43.2	43.2	63.5	-	42.16
40	1 1/2	203.2	146.0	31.7	4	44.4	79.4	60.3	111.1	60.3	49.5	49.5	73.0	-	48.26
50	2	234.9	171.4	28.6	8	50.8	95.2	69.8	127.0	69.8	62.4	62.0	92.1	-	60.31
65	2 1/2	266.7	196.8	31.7	8	57.1	114.3	79.4	142.9	79.4	74.7	74.7	104.8	-	73.02
80	3	304.8	228.6	34.9	8	66.7	133.3	92.1	168.3	92.1	90.7	90.7	127.0	-	88.90
100	4	355.6	273.0	41.2	8	76.2	165.1	107.9	190.5	107.9	116.1	116.1	157.2	-	114.30
125	5	419.1	323.8	47.6	8	92.1	203.2	130.0	228.6	130.0	143.8	143.8	185.7	-	141.30
150	6	482.6	368.3	54.0	8	107.9	234.9	152.4	273.0	152.4	170.7	170.7	215.9	-	168.27
200	8	552.4	438.1	54.0	12	127.0	304.8	177.8	317.5	177.8	221.5	221.5	269.9	-	129.07
250	10	673.1	539.7	66.7	12	165.1	374.6	228.6	419.1	228.6	276.3	276.3	323.8	-	273.05
300	12	762.0	619.1	73.0	12	184.1	441.3	254.0	463.5	254.0	327.1	327.1	381.0	-	323.85

All Dimensions are in Millimeters I Flanges except Lap Joint will be furnished with(6.35mm) Raised Face, which is not included in Thickness(C) and Lenght through Hub(Y).

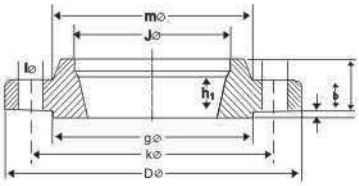
Welding Neck Flanges Dimensional Tolerances



ANSI B 16.5

D	Outside Diameter	When OD is 24" or less When OD is over 24"	+ 0.06" +0.12"	+ 1.6 mm +3.2 mm
J	Inaide Diarneter	10" and smaller -0.03" 12" to 18" 20" and arger	 -0.06" -0.12" 0.06" -0.8 mm -1.6 mm +3.2mm -1.6 mm	
g	Diameter of Contact face	0.03" Raised Face 0.25" Raised Face Tongue and Groove, Male and Female	+0.03' +0.02" +0.02"	+0.8 mm +0.5 mm +0.5 mm
a	Diameter of Hub at Point of Welding	5" and smaller 6" and larger	 +0.16" - 0.03" +2.4 mm - 0.8 mm +4.0 mm - 0.8 mm	+0.09" - 0.03"
D	Diameter of Hub at Base_	When Hub Base is 24" or less When OD is over 24"	+0.06" +0.12"	+1.6 mm +3.2 mm
I	Drilling and Facing	Bolt Circle Diameter k+0.06" Center-to-center of adjacent bolt holes Max. eccentricity between bolt circle dia.k and machined facing diameters: sizes 2-1/2" and smaller sizes 3" Bro larger	+1.6 mm +0.03" 0.03" 0.06"	 +0.8 mm 0.8 mm 1.6 mm
h	Over all Length of Hub	10" and smaller +0.06" 12" and larger	 +0.12"	+1.6 mm +3.2 mm
b	Thickness	18" and smaller +0.12" 20" and larger	+3.2 mm +0.19"	 +4.8 mm

Lap joint, Threaded and Blind Flanges Dimensional Tolerance

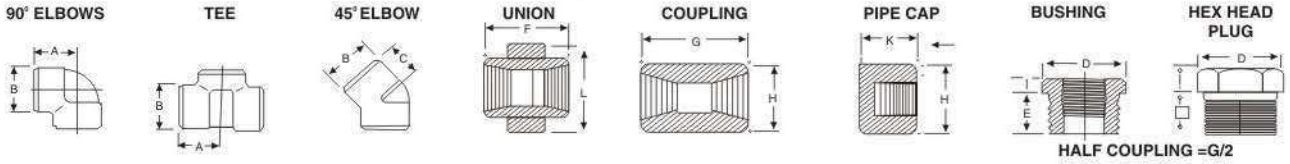


ANSI B 16.5

D	Outside Diameter	When OD is 24" or less When OD is over 24"	+ 0.06" +0.12"	+ 1.6 mm +3.2 mm
J1,2,3	Inside Diameter	Slip-on and Lap Joint 10" and smaller 12" and larger Threaded	+0.0.3" +0.06" Within limits on boring gauge	+0.8 mm +1.6 mm
g	Diameter of Counterbore Diameter of Contact Face	Same as for inside Diameter 0.03" Raised Face 0.25" Raised Face Tongue and Groove, Male and Female	 +0.03" +0.02" +0.02" not for flanges with ring joint	 +0.8 mm +0.5 mm +0.5 mm
m	Outside Diameter of Hub1)	12" and smaller 14" and larger	+0.09" - 0.06" +0.12" +2.4 mm - 1.6 mm +3.2 mm	
I	Drilling and Facing	Bolt Circle Diameter k Center-to-center of adjacent bolt holes Max. eccentricity between bolt circle dia. k and machined facing diameters: sizes 2-1/2" and smaller sizes 3" and	+0.06" +0.03" 0.03" 0.06"	+1.6 mm +0.8 mm 0.8 mm 1.6 mm
L1,2,3	Over all Length of Hub	18" and smaller 20" and larger	+0.12" - 0.03" +0.19" - 0.03" +3.2 mm - 0.8 mm +4.8 mm - 1.6 mm	
b	Thickness	18" and smaller 20" and larger	+0.12" +0.19"	+3.2 mm +4.8 mm

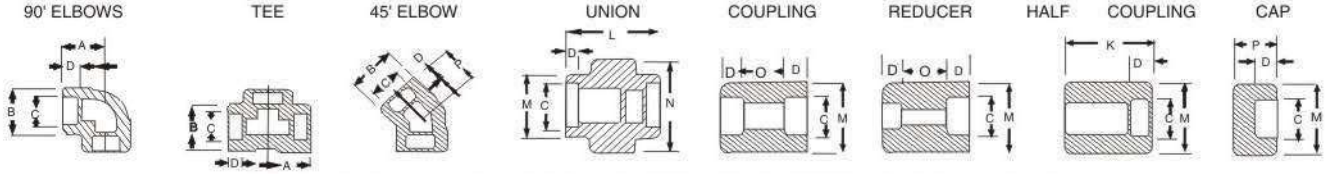
1) This tolerance is not covered by ANSI B 16.5

Dimension in MM of Forged Screwed & Socket Weld Fitting



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

NOM	PIPE	3000 L.B.S.						COMMON FACTORS						6000 L.B.S					
BORE	O.D.	A	B	C	G	H	K	D	E	F	I	J	L	A	B	C	G	H	K
1/8"	10.3	21	22	17	32	16	19	11	10	40	-	6	-	25	25	19	32	22	-
1/4"	13.7	25	25	19	35	19	25	16	11	43	3	6	32	29	33	22	35	25	27
3/8"	17.2	29	33	22	38	22	25	17.5	13	48	4	8	38	33	38	25	38	32	27
1/2"	21.3	33	38	25	48	29	32	22	15	51	5	8	46	38	46	29	48	38	33
3/4"	26.7	38	46	29	51	35	37	27	16	57	6	10	51	44	56	33	51	44	38
1"	33.4	44	56	33	60	44	41	35	19	64	6	10	60	51	62	35	60	57	43
1 1/4"	42.2	51	62	35	67	57	44	44.5	21	70	7	14	72	60	75	43	67	64	46
1 1'2"	48.3	60	75	43	79	64	44	51	21	79	8	16	80	64	84	44	79	76	48
2"	60.3	64	84	45	86	76	48	63.5	22	88	9	17	94	83	102	52	86	92	51
2 1/2"	73.02	83	102	52	92	92	60	76	27	118	10	21	122	95	121	64	92	108	64
3"	89.0	95	121	64	108	108	65	89	29	121	10	25	140	106	146	79	108	127	68
4"	114.5	114	152	79	121	140	68	117.5	32	150	13	25	180	114	152	79	121	159	75



DIMENSION IN MM OF SOCKET WELD FITTING TO ANSI B-16.11

NOM	PIPE	3000 L.B.S.						COMMON FACTORS						6000 L.B.S					
BORE	O.D.	A	B	K	J	L	M	N	P	Q	C	D	O	O	A	B	M	K	N
1/8"	10.3	22	18.5	26	16	40	17.3	32	17.5	10	10.7	10	5	8	22	22	20	25	46
1/4"	13.7	22	22	26	18	43	21.2	32	17.5	10	14.1	10	5	8	27	25	24	25	51
3/8"	17.2	25	25	26	19	48	25.4	36	19	10	17.6	10	3	9	27	28	28	26	60
1/2"	21.3	27	32	30	21	51	31	43	22	10	21.7	10	6	13	31	34	34	31	72
3/4"	26.7	34	38	36	24	57	37	50	25	13	27	13	6	13	37	42	41	35	80
1"	33.4	37	46	40	25	64	45.2	60	27	13	33.8	13	9	17	42	50	50	40	94
1 1/4"	42.2	42	56	40	29	70	55	70	30	13	42.6	13	9	17	47	59	58	41	100
1 1'2"	48.3	47	62	40	30	79	61.4	78	32	13	48.7	13	9	17	53	67	66	43	122
2"	60.3	56	75	52	37	89	75	95	38	13	61.2	16	15	23	59	84	83	55	
2 1/2"	73.02	60	92	52	48	114	91.3	125	38	16	73.8	16	14	24		102		56	
3"	89.00	76	110	52	51	127	108.8	140	44	16	89.8	16	14	24		121		58	
4"	114.50	88	137	58		150	136.9		48	19	115.5	19	14	24		152		64	

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

Manufacturer of Butt Weld Fittings:

Our highly-skilled manpower is dedicated to producing the finest quality butt weld pipe fittings, meeting a wide variety of material specifications. Their knowledge and experience of metal properties, welding procedures and quality control have set the pace and standard expected by our customers world-wide.

We manufacture fittings from 1/2" to 60" in Schedule 5s, 10s, 40s, 80s, 10, 20, 40, STD, 60, 80, XS, 100, 120, 140, 160, XXS & NS available with NACE and other specifications.

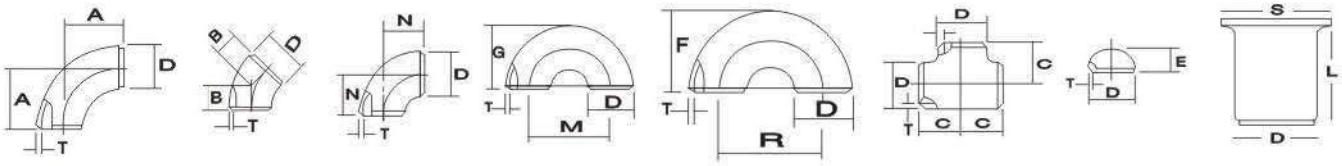
Further we keep huge inventories of fittings to meet the urgent project requirements.

Chemical Composition & Mechanical Properties

Steel type	ASTM Grade	Chemical composition									Mechanical properties				
		C% max	Mn%	P% max	S% max	Si%	Cr%	Mo%	Ni%	Others	R.min. Tensile Strength MPa	S.min. Yield Strength MPa	A% min.(2" /4D) Elongation		Impact test KCV (2) J
													Long.	Transv.	
A234	WPB(1)	0.3	0.29-1.06	0.05	0.058	0.10 min	0.4	0.15	0.4	Cu=0.4 V=0.08 Cb=0.02	415-585	240	30	20	-
	WPC(1)	0.35	0.29-1.06	0.05	0.058	0.10 min	0.4	0.15	0.4	Cu=0.4 V=0.08 Cb=0.02	485-655	275	30	20	-
A420	WPL/6(1)	0.3	0.6-1.35	0.035	0.04	0.15-0.30	0.3	0.12	0.4	Cu=0.4 V=0.08 Cb=0.02	415-585	240	30	16,5	-45°C 17.6/13.6
	WPL3	0.2	0.31-0.64	0.05	0.05	0.13-0.37	-	-	3.2-3.8	-	450-620	240	30	20	-101°C17.6/13.6
A234	WP1	0.28	0.30-0.9	0.045	0.045	0.10-0.50	-	0.44-0.65	-	-	380-550	205	30	20	-
	WP12CL1	0.05-0.2	0.3-0.8	0.045	0.045	0.6	0.8-1.25	0.44-0.65	-	-	415-585	220	30	20	-
	WP12CL2	-	-	-	-	-	-	-	-	-	485-655	275	30	20	-
	WP11CL1	-0.5-0.15	0.3-0.6	0.3	0.3	0.5-10	1.0-1.5	0.44-0.65	-	-	415-585	205	30	20	-
	WP11CL2	0.5-0.2	0.3-0.8	0.4	0.4	0.5-10	1.0-1.5	0.44-0.65	-	-	485-655	275	30	20	-
	WP11CL3	-	-	-	-	-	-	-	-	-	520-690	310	30	20	-
	WP22CL1	0.05-0.15	0.3-0.6	0.04	0.04	0.5	1.9-2.6	0.87-113	-	-	415-585	205	30	20	-
	WP22CL3	-	-	-	-	-	-	-	-	-	520-690	310	30	20	-
	WP5	0.15	0.3-0.6	0.04	0.03	0.5	4.0-6.0	0.44-0.65	-	-	415-585	205	30	20	-
	WP9	0.15	0.3-0.6	0.03	0.03	0.25-10	8.0-10.0	0.9-1.10	-	-	415-585	205	30	20	-
	WP91	0.08-0.12	0.3-0.6	0.02	0.01	0.2-0.5	8.0-9.5	0.85-1.05	0.4	V=0.18-0.25 Cb=0.06 -0.10 N=0.03 - 0.07 Al=0.04	585-760	415	20	-	-
A403	WP304	0.08	2	0.045	0.03	1	18-20	-	8.0-11.0	-	515	205	28	20	-
	WP304L	0.035	2	0.045	0.03	1	18-20	-	8.0-13.0	-	485	170	28	20	-
	WP304H	0.04-0.10	2	0.045	0.03	1	18-20	-	8.0-11.0	-	515	205	28	20	-
	WP316	0.08	2	0.045	0.03	1	18-20	2.0-3.0	11.0-14.0	-	515	205	28	20	-
	WP316L	0.035	2	0.045	0.03	1	18-20	2.0-3.0	10.0-16.0	-	485	170	28	20	-
	WP321	0.08	2	0.045	0.03	1	17.0-20.0	-	9.0-13.0	Ti=5xC max 0.70%	515	205	28	20	-
	WP321H	0.04-0.10	2	0.045	0.03	1	17.0-20.0	-	9.0-13.0	Ti=4xC max 0.60%	515	205	28	20	-
	WP347	0.08	2	0.045	0.03	1	17.0-20.0	-	9.0-13.0	Cb+Ta>=10x%C max 0.10%	515	205	28	20	-
	WP347H	0.04-0.10	2	0.045	0.03	1	17.0-20.0	-	9.0-13.0	Cb+Ta>=8x%C max 0.10%	515	205	28	20	-
	WPS 31254	0.02	1	0.03	0.01	0.8	19.5-20.5	6.0-6.5	17.5-18.5	N=0.18-0.22 Cu=0.5-1.0	515	205	28	20	-
A815	S 31803	0.03	2	0.03	0.02	1	21.0-23.0	2.5-3.5	4.5-6.5	N=0.08-0.2	620	450	25	-	-
	WP410	0.15	1	0.04	0.03	1	11.5-13.5	-	0.5	-	485-655	205	20	-	-
B366	WPNIC10	0.06-0.10	1.5		0.015	1	19.0-23.0	-	30.0-35.0	Cu=0.75	450	170	30		
	WPNIC11	0.06-0.10	1.5		0.015	1	19.0-23.0	-	30.0-35.0	Al=0.15-0.60 Ti=0.15-0.60 Fe=39.5 min. Al+Ti=0.85-1.20	450	170	30		

Titanium alloys, Nickel alloys, Inconel alloys, Coupro nickel & Aluminium alloys are also available upon request.
For each reduction of 0.01% below the specified carbon max., an increase of 0.06% Mn above the specified max. will be permitted up to 1.35% max.
2) Relative to 10x10 specimen.

Butt Welding Pipe Fitting Dimensional Standard as per ANSI B-16.9 & B-16.28

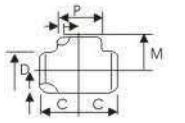


90° Elbow long radius | 45° Elbow | 90° Elbow short radius | 180° Return short radius | 180 Return long radius | Tee equal | Cap | Stubend

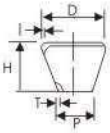
Nominal Pipe Size		Outside Diameter	Center to Face				Back to Face			Center to Center			Length 'L' MSSSP43 B16.9	
Inch.	mm	D	A	B	C	N	E	F	G	R	M	S	L	L
1/2	15	21.3	38.00	16.0	25.0	_	25.0	48.0	_	76.0		35.0	50.8	76.2
3/4	20	26.7	29.00	11.0	29.0	_	25.0	43.0	_	57.0		43.0	50.8	76.2
1	25	33.4	38.00	22.0	38.0	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	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	1016	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	63.0	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	216.0	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	254
12	300	323.9	457.0	190.0	254.0	303.0	152.0	619.0	467.0	914.0	610.0	381.0	152.4	254
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	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	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	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	991.0	406.0	495.0	660.0	267.0							
28	700	711	1067.0	438.0	521.0	771.0	267.0							
30	750	762	1143.0	470.0	589.0	762.0	267.0							
32	800	813	1219.0	502.0	597.0	813.0	267.0							
34	850	864	1295.0	533.0	635.0	864.0	267.0							
36	900	914	1372.0	565.0	673.0	914.0	267.0							

T = Wall Thickness

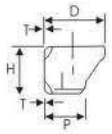
Butt Welding Pipe Fitting Dimensional Standard as per ANSI B-16.9 & B-16.28



REDUCING TEE



CONCENTRIC REDUCER



ECCENTRIC REDUCER

Nominal Pipe Size		Outside Diameter		Center to End		Length
Inch.	mm	D	P	C	M	H
1/2 x 3/8	15 x 10	21.3	17.1	25	25	-
1/2 x 1/4	15 x 8	21.3	13.7	25	25	-
3/4 x 1/2	20 x 15	33.4	21.3	29	29	38
3/4 x 3/8	20 x 10	33.4	17.1	29	29	38
1 x 3/4	25 x 20	26.7	26.7	38	38	51
1 x 1/2	25 x 15	26.7	21.3	38	38	51
11/4 x 1	32 x 25	42.2	33.4	48	48	51
11/4 x 3/4	32 x 20	42.2	26.7	48	48	51
11/4 x 1/2	32 x 15	42.2	21.3	48	48	51
11/2 x 11/2	40 x 32	48.3	42.2	57	57	64
11/2 x 1	40 x 25	48.3	33.4	57	57	64
11/2 x 3/4	40 x 20	48.3	26.7	57	57	64
11/2 x 1/2	40 x 15	48.3	21.3	57	57	64
2 x 11/2	50 x 40	60.3	48.2	64	60	76
2 x 11/4	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
21/2 x 2	65 x 50	73.0	60.3	76	70	89
21/2 x 11/2	65 x 40	73.0	48.3	76	67	89
21/2 x 11/4	65 x 32	73.0	42.2	76	64	89
21/2 x 1	65 x 25	73.0	33.4	76	57	89
3 x 21/2	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 11/2	80 x 40	88.9	48.3	86	73	89
3 x 11/4	80 x 32	88.9	42.2	86	70	89
4 x 31/2	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 21/2	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 11/2	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 31/2	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 21/2	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 31/2	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 21/2	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	200x150	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 31/2	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	-
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	-
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	-
20 x 8	500 x 200	508.0	219.1	381	324	-
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	-
24 x 12	600 x 300	610.0	323.9	432	397	-
24 x 10	600 x 250	610.0	273.1	432	384	-

Dimensional Tolerances and Welding Ends

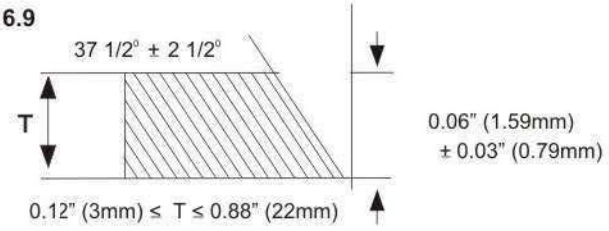
MSS SP-43

Nominal Pipe Size	All Fittings		90° Elbows 45 Elbows Tees	Reducers Lap joint Stub Ends	180° Returns			Caps	Lap-Joint Stub Ends	
	Outside Diameter at Welding End	Wall Thickness	Center-to End Dimension ABCM	Overall Length FH	Center-to Center Dimension P	Back-to-Face Dimension K	Alignment of End U	Over Length E	Fillet Radius of Lap A	Outside Diameter of Lap G
½ to 1 1/2	+0.76	Not less than 87.5% of nominal thickness	+1.52	+1.52	+6.35	+6.35	+0.76	+3.05	+0 0.76	+0 -0.75
2 to 3 1/2	+0.75		+1.52	+1.52	+6.35	+6.35	+0.76	+3.05	+0 -0.76	+0 -0.76
	+0.76		+1.52	+1.52	+6.35	+6.35	+0.76	+3.05	+0 -1.52	+0 -0.76
5 to 8	+1.52 -0.76		+1.52	+1.52	+6.35	+6.35	+0.76	+6.35	+0 -1.52	+0 -0.76
10 to 18	+2.29 -0.76		+2.29	+2.29	+9.65	+6.35	+1.52	+6.35	+0 -1.52	+0 -1.52
20 to 24	+3.05 -0.76		+2.29	+2.29	+9.65	+6.35	+1.52	+6.35	+0 -1.52	+0 -1.52

ANSI B16-9

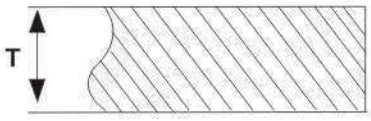
All Fittings				90° Elbows 45° Elbows & Tees	Reducers & Lap joint Stub Ends	Caps	180° Returns				Lap-Joint Stub Ends	
Nominal Pipe Size	Outside Diameter at Bevel	Inside Diameter at End	Wall Thickness	Center-to End Dimension ABCM	Overall Length FH	Over Length E	Center-to Center Dimension P	Back-to-Face Dimension K	Alignment of End U	Outside Diameter of Lap G	Thickness of Lap T	Fillet Radius of Lap R
½ to 1 1/2	+1.52 -0.76	+0.76	Not less than 87.5% of nominal thickness	+1.52	+1.52	+3.05	+6.35	+6.35	+0.76	+0 -0.76	+1.52 -0	+0 -0.76
3 to 3 ½	+1.52	+1.52		+1.52	+1.52	+3.05	+6.35	+6.35	+0.76	+0 -0.76	+1.52 -0	+0 -0.76
4	+1.52	+1.52		+1.52	+1.52	+3.05	+6.35	+6.35	+0.76 -0.76	+0 -0	+1.52 -1.52	+0
5 to 8	+2.29 -1.52	+1.52		+1.52	+1.52	+6.35	+6.35	+6.35	+0.76	+0 -0.76	+1.52 -0	+0 -1.52
10 to 18	+4.06 +3.05	+3.05		+2.29	+2.29	+6.35	+9.65	+6.35	+1.52	+0 -1.52	+1.52 -0	+0 -1.52
20 to 24	+6.35 -4.83	+4.83		+2.29	+2.29	+6.35	+9.65	+6.35	+1.52	+0 -1.52	+1.52 -0	+0 -1.52
26 to 30	+6.35 -4.83	+4.83		+3.05	+4.83	+9.65						
32 to 48	+6.35 -4.83	+4.83		+4.83	+4.83	+9.65						

ANSI B16.9



0.06" (1.59mm)
± 0.03" (0.79mm)

BEVEL



T = 0.12" (3mm)

BUTTING | SANDVIK | V&M | JFE | Sumitomo | WELSPUN | Tenaris | MAHARASHTRA SEAMLESS LIMITED | ISMT LTD.

Stockiest of Stainless Steel, Carbon and Alloys Steel Pipes:

We are one of the biggest Exporters Stockholders and Suppliers of Carbon Steel and Alloy Steel LSAW / DSAW / HSAW and Seamless Pipes. Our stock capacity of almost 40,000 M/Ton of pipes ranging from ½" NB to 24" NB in case of Seamless and from 18" NB to 100" NB in case of SAW Pipes. We stock all grades right from API 5L Gr.B PSL1 to API 5L X70 PSL2. Our Stock is not limited to Indian Origin only but also from Europe, Japan & USA. Apart from bare pipes we can also supply pipes with 3LP / 3LPE and FBE coating with certificate as per EN 10204 3.1 / 3.2. We are approved by almost all Third Party Inspection agencies like LRIS, BV, SGS, TUV, DNV, VELOCY etc.

Further we also Import & Stock Stainless Steel Pipe in huge quantity.

Chemical Composition & Mechanical Properties of Stainless Steel S Pipe As Per ASTM A 312

Chemical Composition %										Mechanical Properties, min						
Grade	C Max	Si Max	Mn Max	P Max	S Max	Ni	Cr	Mo	Other	Tensile Strength min. Ksi (Mpa)	Yeld Point Ksi (Mpa)	Elongation %(G.L.: 2in Or 1mm)			Hardness Test Max	
												Full Section	Strip specimen	Round specimen	Brinell	Rockwell
304	0.08	1.00	2.00	0.045	0.030	8.00-11.0	18.0-20.0	-	-	75(515)	30(205)	35	35 56T + 17.50	28	192	B 90
304L	0.035	1.00	2.00	0.045	0.030	8.00-13.0	18.0-20.0	-	-	70(485)	25(170)	35	35 56T + 17.50	28	192	B 90
304H	0.04-0.10	1.00	2.00	0.045	0.030	8.00-11.0	18.0-20.0	-	-	75(515)	30(205)	35	35 56T + 17.50	28	192	B 90
316	0.08	1.00	2.00	0.045	0.030	11.0-14.0	16.0-18.0	2.0/3.0	-	75(515)	30(205)	35	35 56T + 17.50	28	192	B 90
316L	0.035	1.00	2.00	0.045	0.030	10.0-14.0	16.0-18.0	2.0/3.0	-	70(485)	25(170)	35	35 56T + 17.50	28	192	B 90
316H	0.04-0.10	1.00	2.00	0.045	0.030	11.0-14.0	16.0-18.0	2.0/3.0	-	75(515)	30(205)	35	35 56T + 17.50	28	192	B 90
316TI	0.08	0.75	2.00	0.045	0.030	10.0-12.0	16.0-18.0	2.0/3.0	Ti5xC% <0.70	75(515)	30(205)	35	35 56T + 17.50	28	192	B 90
317L	0.035	1.00	2.00	0.045	0.030	11.0-15.0	18.0-20.0	3.0/4.0	-	75(515)	30(205)	35	35 56T + 17.50	28	192	B 90
309S	0.08	1.00	2.00	0.045	0.030	12.0-15.0	22.0-24.0	0.75		75(515)	30(205)	35	35 56T + 17.50	28	192	B 90
310S	0.08	1.00	2.00	0.045	0.030	19.0-22.0	24.0-26.0	0.75		75(515)	30(205)	35	35 56T + 17.50	28	192	B 90
310H	0.04-0.10	1.00	2.00	0.045	0.030	19.0-22.0	24.0-26.0	-		75(515)	30(205)	35	35 56T + 17.50	28	192	B 90
321	0.08	1.00	2.00	0.045	0.030	9.0-12.0	17.0-19.0	-	Ti5xC% <0.70	75(515)	30(205)	35	35 56T + 17.50	28	192	B 90
312H	0.04-0.10	1.00	2.00	0.045	0.030	9.0-12.0	17.0-19.0	-	Ti4xC% <0.60	75(515)	30(205)	35	35 56T +	28 17.50	192	B 90
347	0.08	1.00	2.00	0.045	0.030	9.0-13.0	17.0-19.0	-	Nb/Ta: 10xC%<1%	75(515)	30(205)	35	35 56T +	28 17.50	192	B 90
347H	0.04-0.10	1.00	2.00	0.045	0.030	9.0-13.0	17.0-19.0	-	Nb/Ta: 8xC%<10%	75(515)	30(205)	35	35 56T +	28 17.50	192	B 90

Chemical Composition and Mechanical Properties of API Pipes

Specs	Grade	Chemical Composition % Maximum							Mechanical Properties								% Elongation e	Impact Energy J (ft-lb)	Hydrostatic Test Pressure
									Yield Strength				Tensile Strength						
		C	Mn	P	S	Si	C.E.		Min.		Max.		Min.		Max.				
							PCM	IIW	PSI	Mpa	PSI	Mpa	PSI	Mpa	PSI	Mpa			
API5L PSL-1	L210 or A	0.22	0.90	0.030	0.030		-	-	30,500	210	-	-	48,600	335	-	-	U.S Customary Unit e= 625,000A$^{0.2}$/U$^{0.9}$ S.I. Unit e=1940 A$^{0.2}$/U$^{0.9}$	-	U.S Customary Unit, Unit, P = 2ST/D S.I. Unit, P= 2000ST/D S = Fibre Stress in PSI (Mpa) upto Gr. = 60% of min. Y.S. for all sizes Gr. x 42= 60% of min.Y.S. & above for all size < 5.9/16" =75% of min. Y.S. for size > 5.9/16" and < 8.5/8" =85% min. Y.S. for size > 8.5/8" < 20" =90% Min. Y. S. for size > 20"
	L245 or B	0.26	1.20	0.030	0.030		-	-	35,500	2.45	-	-	60,200	415	-	-		-	
	L290 or X42	0.26	1.30	0.030	0.030		-	-	42,100	290	-	-	60,200	415	-	-		-	
	L320 or X46	0.26	1.40	0.030	0.030		-	-	46,400	320	-	-	63,100	435	-	-		-	
	L360 or X52	0.26	1.40	0.030	0.030		-	-	52,200	360	-	-	66,700	460	-	-		-	
	L390 or X56	0.26	1.40	0.030	0.030		-	-	56,600	390	-	-	71,100	490	-	-		-	
	L415 or X60	0.26	1.40	0.030	0.030		-	-	60,200	415	-	-	75,400	520	-	-		-	
	L450 orX65	0.26	1.45	0.030	0.030		-	-	65,300	450	-	-	77,600	535	-	-		-	
	L485 or X70	0.26	1.65	0.030	0.030		-	-	70,300	485	-	-	82,700	570	-	-		-	
API 5L PSL-2	L245M or BM	0.22	1.20	0.025	0.015	0.450	0.25	0.43	35,500	245	65,300	450	60,200	415	110,200	760		27(20)	STD Test Pressure for Gr. X 42 & above limited to 2970 PSI (20700kpa) ALT Test Pressure limited to 7260 PSI (50000 kpa) for size < 16" & 3630 PSI (25000kpa.) for size > 16"
	L290 M or X42M	0.22	1.30	0.025	0.015	0.450	0.25	0.43	42,100	290	71,800	495	60,200	415	110,200	760		27(20)	
	L320 M or X460M	0.22	1.30	0.025	0.015	0.450	0.25	0.43	46,400	320	76,100	525	63,100	435	110.200	760		27(20)	
	L360 M or X52M	0.22	1.40	0.025	0.015	0.450	0.25	0.43	52,200	360	76,900	530	66,700	460	110,200	760		27(20)	
	L390 M or X56M	0.22	1.40	0.025	0.015	0.450	0.25	0.43	56,600	390	79,000	545	71,100	490	110,200	760		27(20)	
	L415 M or X60M	0.12	1.60	0.025	0.015	0.450	0.25	0.43	60,200	415	81,900	565	75,400	520	110,200	760		27(20)	
	L450 M or X65M	0.12	1.60	0.025	0.015	0.450	0.25	0.43	65,300	450	87,000	600	77,600	535	110,200	760		27(20)	
	L485 M or X70M	0.12	1.70	0.025	0.015	0.450	0.25	0.43	70,300	485	92,100	635	82,700	570	110,200	760		27(20)	

SUMMARY OF THE MAIN ASTM STANDARDS GENERALLY USED FOR PIPING

ASTM	Grade	C max	Mn Max	P Max	S Max	Si Max	Ni	Cr.	Mo	Cu	Others	Tensile Strength	Yield Strength Mini-MPa/Psi Mini-MPa/Psi	Elong mini %	Impact test at C	Impact test at F
A 53	A	0.25	0.95	0.05	0.06		0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	300-48000	205-30000	36		
	B	0.30	1.20	0.05	0.06		0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	415-60000	240-35000	29.5		
A 106	A	0.25	0.27-0.93	0.025	0.025	0.10 mini	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	330-48000	205-30000	L35-T25		
	B	0.30	0.29-1.06	0.025	0.025	0.10 mini	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	415-60000	240-35000	L30-T16.5		
	C	0.35	0.29-1.06	0.025	0.025	0.10 mini	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	485-70000	275-40000	L30-T16.5		
A 333	1	0.25	0.27-0.93	0.025	0.025							380-55000	205-3000	L35-T25	-45	-50
	3	0.19	0.31-0.64	0.025	0.025	0.18-0.37	3.18-3.82					450-65000	240-35000	L30-T20	-100	-150
	4	0.12	0.50-1.05	0.025	0.025	0.18-0.37	0.47-0.98	0.44-1.01		0.40-0.75	Ai:0.40-0.30%	415-60000	240-35000	L30-T16	-100	-150
	6	0.30	0.29-1.06	0.025	0.025	0.10 mini						415-60000	240-35000	L30-T16	-45	-50
	9	0.20	0.40-1.06	0.025	0.025		1.60-2.24			0.75-1.25		435-63000	315-46000	L28	-75	-100
A 335	P1	0.10-0.20	0.30-0.80	0.025	0.025	0.10-0.50			0.44-0.65			380-55000	205-30000	L30-T20		
	P5	0.15	0.30-0.60	0.025	0.025	0.50		4.00-6.00	0.45-0.65			415-60000	205-30000	L30-T20		
	P9	0.15	0.30-0.60	0.025	0.025	0.25-1.00		8.00-10.0	0.90-1.10			415-60000	205-30000	L30-T20		
	P11	0.05-0.15	0.30-0.60	0.025	0.025	0.50-1.00		1.00-1.50	0.44-0.65			415-60000	205-30000	L30-T20		
	P12	0.05-0.15	0.30-0.61	0.025	0.025	0.50		0.80-1.25	0.44-0.65			415-60000	220-32000	L30-T20		
	P21	0.05-0.15	0.30-0.60	0.025	0.025	0.50		2.65-3.35	0.80-1.06			415-60000	205-30000	L30-T20		
	P22	0.05-0.15	0.30-0.60	0.025	0.025	0.50		1.90-2.60	0.87-1.13			415-60000	205-30000	L30-T20		
	P91	0.08-0.12	0.30-0.60	0.020	0.010	0.20-0.50	0.40 max	8.00-9.50	0.85-1.05		Vo-0.18-0.25%	585-85000	415-65000	L20		
A 358	TP 304	0.08	2.00	0.045	0.030	0.75	8.0-10.50	18.0-20.0	-				Class 1 : Double welded pipes & full Radiography			
	TP 310S	0.08	2.00	0.045	0.030	1.50	19.0-22.0	24.0-26.0	-				Class 2 : Double welded no Radiography			
	TP 316	0.08	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.0-3.0				Class 3 : Single welded full Radiography			
	TP 316L	0.030	2.00	0.045	0.030	0.75	10.4-14.0	16.0-18.0	2.0-3.0				Class 4 : Single welded full Radiography			
	TP 317L	0.035	2.00	0.045	0.030	0.75	11.0-15.0	18.0-20.0	3.0-4.0				root pass without addition of filler metal			
	TP 321	0.08	2.00	0.045	0.030	0.75	9.0-12.0	17.0-20.0	-			Ti5xC<0.70%	Class 5 : Double Welded sport Radiography			
	TP 347	0.08	2.00	0.045	0.030	0.75	9.0-13.0	17.0-20.0	-			Cb10xC<1.00%				

ASME B 36.10 / B 36.19 Pipe Schedule - Diameters - Wall Thickness - Weights

		ANSI B 36.10													ANSI B 36.19			
	Outside Diameter mm	SCH 10 w.t./mm kg/m ID/mm	SCH 20 w.t./mm kg/m ID/mm	SCH 30 w.t./mm kg/m ID/mm	SCH STD w.t./mm kg/m ID/mm	SCH 40 w.t./mm kg/m ID/mm	SCH 60 w.t./mm kg/m ID/mm	SCH XS w.t./mm kg/m ID/mm	SCH 80 w.t./mm kg/m ID/mm	SCH 100 w.t./mm kg/m ID/mm	SCH 120 w.t./mm kg/m ID/mm	SCH 140 w.t./mm kg/m ID/mm	SCH 160 w.t./mm kg/m ID/mm	SCH XXS w.t./mm kg/m ID/mm	SCH 5S w.t./mm kg/m ID/mm	SCH 10S w.t./mm kg/m ID/mm	SCH 40S w.t./mm kg/m ID/mm	SCH 80S w.t./mm kg/m ID/mm
1/4"	13,7	1,65 0,50 10,40			2,24 0,63 9,22	2,24 0,63 9,22		3,02 0,80 7,66	3,02 0,80 7,66				4,00 0,94 5,70	5,00 1,05 3,70	1,24 0,39 11,22	1,65 0,56 10,40	2,24 0,84 9,22	3,02 0,81 7,66
3/8"	17,1	1,65 0,64 13,80			2,31 0,84 12,48	2,31 0,84 12,48		3,20 1,10 10,70	3,20 1,10 10,70				5,00 1,50 7,10	6,30 1,70 4,50	1,65 0,84 13,80	1,65 0,64 13,80	2,31 0,86 12,48	3,20 1,12 10,70
½"	21,3	2,11 1,02 17,08			2,77 1,27 15,76	2,77 1,27 15,76		3,73 1,62 13,84	3,73 1,62 13,84				4,78 1,95 11,74	7,47 2,55 6,36	1,65 0,81 18,00	2,11 1,02 17,08	2,77 1,29 15,76	3,37 1,65 13,84
3/4"	26,7	2,11 1,30 22,48			2,87 1,69 20,96	2,87 1,69 20,96		3,91 2,20 18,88	3,91 2,20 18,88				5,56 2,90 15,58	7,82 3,64 11,06	1,65 1,03 23,40	2,11 1,30 22,48	2,87 1,71 20,96	3,91 2,23 18,88
1"	33,4	2,77 2,13 27,86			3,38 2,50 26,64	3,38 2,50 26,64		4,55 3,24 24,30	4,55 3,24 24,30				6,35 4,25 20,70	9,09 5,45 15,22	1,65 1,31 30,10	2,77 2,13 27,86	3,38 2,54 26,64	4,55 3,29 24,30
1 1/4"	42,2	2,77 2,73 36,66			3,56 3,39 35,08	3,56 3,39 35,08		4,85 4,47 32,50	4,85 4,47 32,50				6,35 5,61 29,50	9,70 7,77 22,80	1,65 1,68 38,90	2,77 2,73 36,66	3,56 3,44 35,08	4,85 4,53 32,50
1 ½"	48,3	2,77 3,16 42,76			3,68 4,05 40,94	3,68 4,05 40,94		5,08 5,41 38,14	5,08 5,41 38,14				7,14 7,25 34,02	10,15 9,56 28,00	1,65 1,93 45,00	2,77 3,16 42,76	3,68 4,11 40,94	5,08 5,49 38,14
2"	60,3	2,77 3,99 63,50			3,91 5,44 52,50	3,91 5,44 53,50		5,54 7,48 55,50	5,54 7,48 55,50				8,74 11,11 60,50	11,07 13,44 61,50	1,65 2,42 62,50	2,77 3,99 63,50	3,91 5,52 64,50	5,54 7,60 65,50
2 ½"	73,0	3,05 5,35 66,90			5,16 8,63 62,68	5,16 8,63 62,68		7,01 11,41 58,98	7,01 11,41 58,98				9,53 14,92 53,94	14,02 20,39 44,96	2,11 3,75 68,78	3,05 5,35 66,90	5,16 8,77 62,68	7,01 11,59 58,98
3"	88,9	3,05 6,56 82,80			5,49 11,29 77,92	5,49 11,29 77,92		7,62 15,27 73,66	7,62 15,27 73,66				11,13 21,35 66,64	15,24 27,68 58,42	2,11 4,59 84,68	3,05 6,56 82,80	5,49 11,47 77,92	7,62 15,51 73,66
3 ½"	101,6	3,05 7,53 95,50			5,74 13,57 90,12	5,74 13,57 90,12		8,08 18,63 85,44	8,08 18,63 85,44					16,15 34,00 69,30	2,11 5,26 97,38	3,05 7,53 95,50	5,74 1378 90,12	8,08 18,92 85,44
4"	114,3	3,06 8,50 108,20			6,02 16,07 102,26	6,02 16,07 102,26		8,56 22,32 97,18	8,56 22,32 97,18		11,13 28,32 92,04		13,49 33,54 87,32	17,12 41,03 80,06	2,11 5,93 110,08	3,05 8,56 108,20	6,02 16,32 102,26	8,56 22,67 97,18
5"	141,3	3,40 11,74 134,50			6,55 21,77 128,20	6,55 21,77 128,20		9,53 30,97 122,24	9,53 30,97 122,24		12,70 40,28 115,90		15,88 49,11 109,54	19,05 57,43 103,20	2,77 9,51 135,76	3,40 11,74 134,50	6,55 22,10 128,20	9,53 31,44 122,24
6"	168,3	3,40 14,04 161,50			7,11 28,26 154,08	7,11 28,26 154,08		10,97 42,56 146,36	10,97 42,56 146,36		14,27 54,20 139,76		18,26 67,56 131,78	21,95 79,22 124,40	2,77 11,48 162,76	3,40 14,04 161,50	7,11 28,70 154,08	10,97 43,22 146,36
8"	219,1	3,80 20,12 211,50	6,35 33,31 206,40	7,04 36,81 205,02	8,18 42,55 202,74	8,18 42,55 202,74	10,31 53,08 198,48	12,70 64,64 193,70	12,70 64,64 193,70	15,09 75,92 188,92	18,26 90,44 182,58	20,62 100,90 177,86	23,01 111,20 173,08	22,23 107,90 174,64	2,77 14,90 213,56	3,80 20,12 211,50	8,18 43,20 202,74	12,70 65,64 193,70
10"	273,0	4,19 28,20 264,62	6,35 41,77 260,30	7,80 51,03 257,40	9,27 60,31 254,46	9,27 60,31 254,46	12,70 81,55 247,60	12,70 81,55 247,60	15,09 91,01 242,82	18,26 114,70 236,48	21,44 133,00 230,12	25,40 155,10 222,20	28,58 172,30 215,84	25,40 155,10 222,20	3,40 22,95 266,20	4,19 28,20 254,62	9,27 61,22 254,46	12,70 82,78 247,60
12"	323,8	4,57 36,53 314,66	6,35 49,73 311,10	8,38 66,20 307,04	9,53 73,88 304,74	10,31 79,73 303,18	14,27 108,90 295,26	12,70 97,46 298,40	17,48 132,00 288,84	21,44 159,90 280,92	25,40 186,90 273,00	28,58 208,10 266,64	33,32 238,70 257,16	25,40 186,90 273,00	3,96 31,71 315,88	4,57 36,53 314,66	9,53 74,94 304,74	12,70 98,96 298,40
14"	355,6	6,35 54,69 342,90	7,92 67,90 339,78	9,53 81,33 336,54	9,53 81,33 336,54	9,53 81,33 336,54	15,09 126,70 325,42	12,70 107,30 330,20	19,05 155,10 317,50	23,83 194,90 307,94	27,79 224,60 300,02	31,75 253,50 292,10	35,71 281,70 284,18		3,96 34,87 347,68	4,78 41,99 346,04	9,53 82,50 336,54	12,70 109,05 330,20
16"	406,4	6,35 62,64 393,70	7,92 77,83 390,56	9,53 93,27 387,34	9,53 93,27 387,34	12,70 122,30 381,00	16,66 160,10 373,08	12,70 123,30 381,00	21,44 203,50 383,52	26,19 245,50 354,02	30,96 288,60 344,48	36,53 333,10 333,34	40,49 365,30 325,42		4,19 42,20 398,02	4,78 48,07 396,84	9,53 94,61 387,34	12,70 125,20 381,00
18"	457,2	6,35 70,57 444,50	7,92 87,71 441,38	11,13 122,30 434,94	9,53 105,10 438,14	14,27 155,80 428,66	19,05 205,70 419,10	12,70 139,10 431,80	23,83 254,50 409,54	29,36 309,60 398,48	34,93 363,60 387,34	39,67 408,20 377,86	45,24 459,37 366,72		4,19 47,53 448,82	4,78 54,15 447,64	9,53 106,83 438,14	12,70 141,35 431,80
20"	508,0	6,35 78,55 495,30	9,53 117,10 488,94	12,70 155,10 482,60	9,53 117,10 488,94	15,09 183,40 477,82	20,62 247,80 466,76	12,70 155,10 482,60	26,19 311,10 455,62	32,54 381,50 442,92	38,10 441,40 431,80	44,45 508,10 419,10	50,01 564,80 407,98		4,78 60,23 498,44	5,54 69,70 496,92	9,53 118,95 488,94	12,70 157,51 482,60
22"	558,8	6,35 88,54 546,10	8,63 129,10 539,74	12,70 171,00 533,40	9,53 129,10 539,74	17,48 233,43 523,80	22,23 294,20 514,34	12,70 171,00 533,40	28,58 373,80 501,64	34,93 451,40 488,94	41,28 257,00 476,24	47,63 600,60 463,54	53,98 872,20 450,84		4,78 66,31 549,24	5,54 76,75 547,72	9,53 131,07 539,74	12,70 173,66 533,40
24"	609,6	6,35 94,53 596,90	9,53 141,10 590,54	14,27 209,60 581,06	9,53 141,10 590,54	17,48 255,40 574,64	24,61 355,20 560,38	12,70 187,00 584,20	30,96 442,00 547,68	38,89 547,70 531,82	46,02 640,00 517,56	52,37 720,10 504,86	59,54 808,22 490,52		5,54 83,80 598,52	6,35 95,92 596,90	9,53 143,20 590,54	12,70 189,82 584,20
26"	660,4	7,92 127,30 644,56	12,70 202,70 635,00	15,38 252,24 628,30	9,53 152,80 641,34			12,70 202,70 635,00									9,53 155,22 641,34	12,70 205,85 635,00
28"	711,2	7,92 137,30 695,36	12,70 218,60 685,80	15,88 271,20 679,44	9,53 164,80 692,14			12,70 218,60 685,80									9,53 167,39 692,14	12,70 222,06 685,80
30"	762,0	7,92 147,20 746,16	12,70 234,60 736,60	15,88 291,10 730,24	9,53 176,80 742,94			12,70 234,60 736,60							6,35 120,15 749,30	7,92 149,55 746,16	9,53 179,56 742,94	12,70 238,28 736,60
32"	812,8	7,92 157,20 796,96	12,70 250,60 787,40	15,88 312,10 781,04	9,53 188,80 793,74	17,48 342,90 777,84		12,70 250,60 787,40									9,53 191,73 793,74	12,70 254,50 787,40
34"	863,6	7,92 167,20 847,76	12,70 286,60 838,20	15,88 332,10 831,84	9,53 200,30 844,54	17,48 364,90 828,64		12,70 266,60 838,20									9,53 203,90 844,54	12,70 270,72 838,20
36"	914,4	7,92 176,90 898,56	12,70 282,20 889,00	15,88 351,70 882,64	9,53 212,50 895,34	19,05 420,40 876,30		12,70 282,20 889,00									9,53 215,83 895,34	12,70 286,62 889,00

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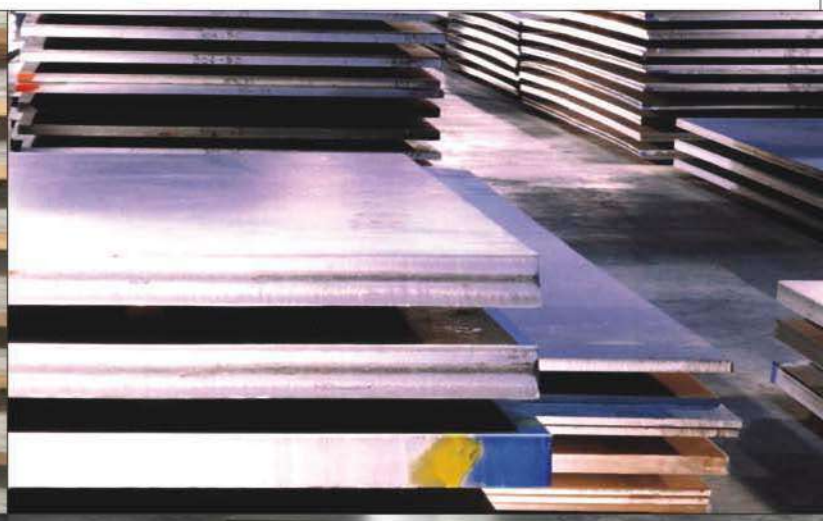

ASTM	Grade	Chemical requirements percent (%)										Mechanical requirements						
		C max	Mn max	P max	S max	Si max	Ni	Cr.	Mo	Cu	Others	Tensile Strength mini-MPa		Yeild Strength mini-MPa		Elong mini %	Hardness Brinell	Hardness Rockwell
A240	304	0.08	2.00	0.045	0.030	0.75	8.0-10.5	18.00-20.0				515		205		40	201	92
	304L	0.03	2.00	0.045	0.030	0.75	8.00-12.0	18.00-20.0				485		170		40	201	92
	310	0.08	2.00	0.045	0.030	1.50	19.0-22.0	24.0-26.0				515		205		40	217	95
	316	0.08	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.00-3.00			515		205		40	217	95
	316L	0.03	2.00	0.045	0.030	0.75	10.0-14.0	16.0-18.0	2.00-3.00			485		170		40	217	95
	317L	0.03	2.00	0.045	0.030	0.75	11.0-15.0	18.0-20.0	3.00-4.00			515		205		40	217	95
	321	0.08	2.00	0.045	0.030	0.75	9.00-12.0	17.0-19.0			Ti>5xC<0.70	515		205		40	217	95
	347	0.08	2.00	0.045	0.030	0.75	9.00-13.0	17.0-19.0			Cb+Ta>10xC<1.10	515		205		40	201	92
A 387 Class1 Class2												Class 1	Class 2	Class 1	Class 2			
	2	005-0.21	0.55-0.80	0.035	0.040	0.15-0.40		0.50-0.80	0.45-0.60			380	486	230	310	22	max201HB	max92HRB
	5	0.15	0.30-0.60	0.04	0.030	0.050		4.00-6.00	0.45-0.65			415	515	205	310	18	max202HB	max92HRB
	7	0.15	0.30-0.60	0.030	0.030	1.00		6.00-8.00	0.45-0.65			415	515	205	310	18	max217HB	max95HRB
	9	0.15	0.30-0.60	0.030	0.030	1.00		8.00-10.0	0.90-1.10			415	515	205	310	18	max217HB	max95HRB
	11	0.04-0.17	0.40-0.65	0.035	0.04	0.50-0.80		1.00-1.50	0.45-0.65			415	515	240	310	22	max217HB	max95HRB
	12	0.04-0.17	0.40-0.65	0.035	0.04	0.15-0.40		0.80-1.15	0.45-0.60			380	450	230	275	22	max217HB	max95HRB
	21	0.04-0.17	0.30-0.60	0.035	0.035	0.50		2.75-3.25	0.90-1.10			415	515	205	310	18	max201HB	max92HRB
	22	0.05-0.17	0.30-0.60	0.035	0.035	0.50		2.00-2.50	0.90-1.10			415	515	205	310	18	max201HB	max92HRB
A 515	55	0.22	0.90	0.035	0.04	0.15-0.40						380-515		205		27		
	60	0.27	0.90	0.035	0.04	0.15-0.40						415-550		220		25		
	65	0.31	0.90	0.035	0.04	0.15-0.40						450-585		240		23		
	70	0.33	1.20	0.035	0.04	0.15-0.40						485-620		260		21		
A 516	55	0.20	0.60-1.20	0.035	0.04	0.15-0.40						380-515		205		27		
	60	0.23	0.85-1.20	0.035	0.04	0.15-0.40						415-550		202		25		
	65	0.26	0.85-1.20	0.035	0.04	0.15-0.40						450-585		240		23		
	70	0.28	0.85-1.20	0.035	0.04	0.15-0.40						485-620		260		21		
A 537	Class 1	0.24	0.70-1.35	0.035	0.040	0.15-0.40	0.25 max	0.80 max	0.35 max			485-620		345		22		
	Class 2	0.24	0.70-1.35	0.035	0.040	0.15-0.40	0.25 max	0.80 max	0.35 max			550-690		415		22		

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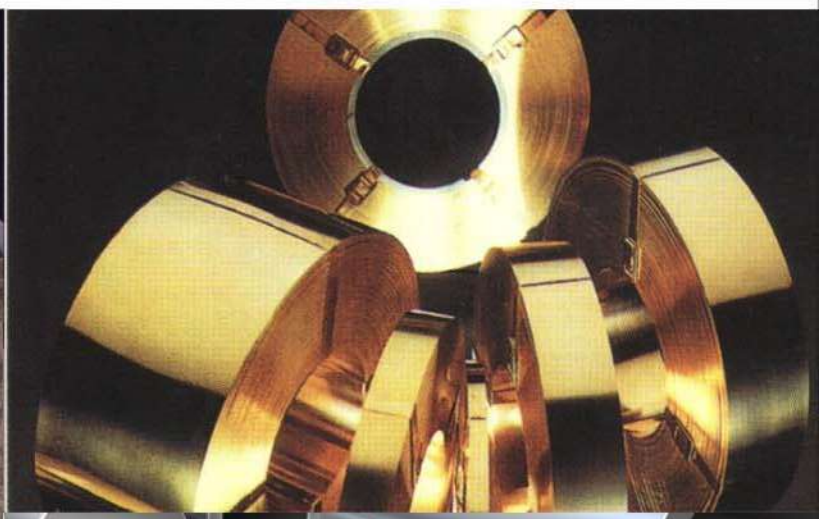

Datasheet for Nickel Alloys & Titanium

Material	Tradamark	UNS	Werkst. nr.	Density	Bar/Billet	Forgings	Flanges	Tube	Pipe	Plate	Fittings
Nickel Alloys								smls/wld	smls/wld		
Alloy 200	Nickel 200	N02200	2.4066	8.89	B160	B564	B564	B163/B730	B161/B725	B162	B366
Alloy 201	Nickel 201	N02201	2.4068	8.89	B160			B163/B730	B161/B725	B162	B366
Alloy 400	Monel 400	N04400	2.4360	8.83	B164	B564	B564	B163/B730	B165/B725	B127	B366
Alloy K-500	Monel K-500	N05500	2.4375	8.46	B865	B865	B865				
Alloy 600	Inconel 600	N06600	2.4816	8.42	B166	B564	B564	B163/B516	B167/517	B168	B366
Alloy 601	Inconel 601	N06601	2.4851	8.20	B166			B163	B167	B168	B366
Alloy 625	Inconel 625	N06625	2.4856	8.44	B446	B564	B564	B444/B704	B444/B705	B443	B366
Alloy 718	Inconel 718	N07718	2.4668	8.19	B637	B637	B637			B670	
Alloy 800	Incoloy 800	N08800	1.4876	8.00	B408	B546	B564	B163/B515	B407/B514	B409	B366
Alloy 800H	Incoloy 800H	N08810	1.4876	8.00	B408	B564	B564	B163/B515	B407/B514	B409	B366
Alloy 800HT	Incoloy 800HT	N08811	1.4876	8.00	B408	B564	B564	B163/B515	B407	B409	B366
Alloy 825	Incoloy 825	N08825	2.4858	8.18	B425	B564	B564	B163/B704	B423/B705	B424	B366
Alloy C-276	Hastelloy C-276	N10276	2.4819	8.87	B574	B564	B564	B622/B619	B622/B619	B575	B366
Alloy C-4	Hastelloy C-4	N06455	2.4610	8.64	B574			B622/B619	B622/B619	B575	B366
Alloy C-22	Hastelloy C-22	N06022	2.4602	8.69	B574	B564	B564	B622/B619	B622/B619	B575	B366
Alloy B-2	Hastelloy B-2	N10665	2.4617	9.22	B335	B564	B564	B622/B619	B622/B619	B575	B366
Alloy 20	Carpenter 20Cb3	N08020	2.4660	8.10	B473	B462	B462	B729/B468	B729/B464	B463	B366
Alloy 904L	Uranus B-6	N08904	1.4539	8.05	B649	B459		B677/B674	B677/B673	B625	B366
Reactive Metals											
Titanium Grade 1			3.7025	4.50	B348	B381	B381	B338	B861/B862	B265	B363
Titanium Grade 2			3.7035	4.50	B348	B381	B381	B338	B861/B862	B265	B363
Titanium Grade 5			3.7165	4.40	B348	B381	B381	B338	B861/B862	B265	B363
Titanium Grade 7			3.7235	4.50	B348	B381	B381	B338	B861/B862	B265	B363
Zirconium 702				6.60	B550	B493	B493	B523	B658	B551	B653
Tantalum				16.66	B365			B521		B708	
Special Stainless											
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superduplex, duplex, 6Mo											

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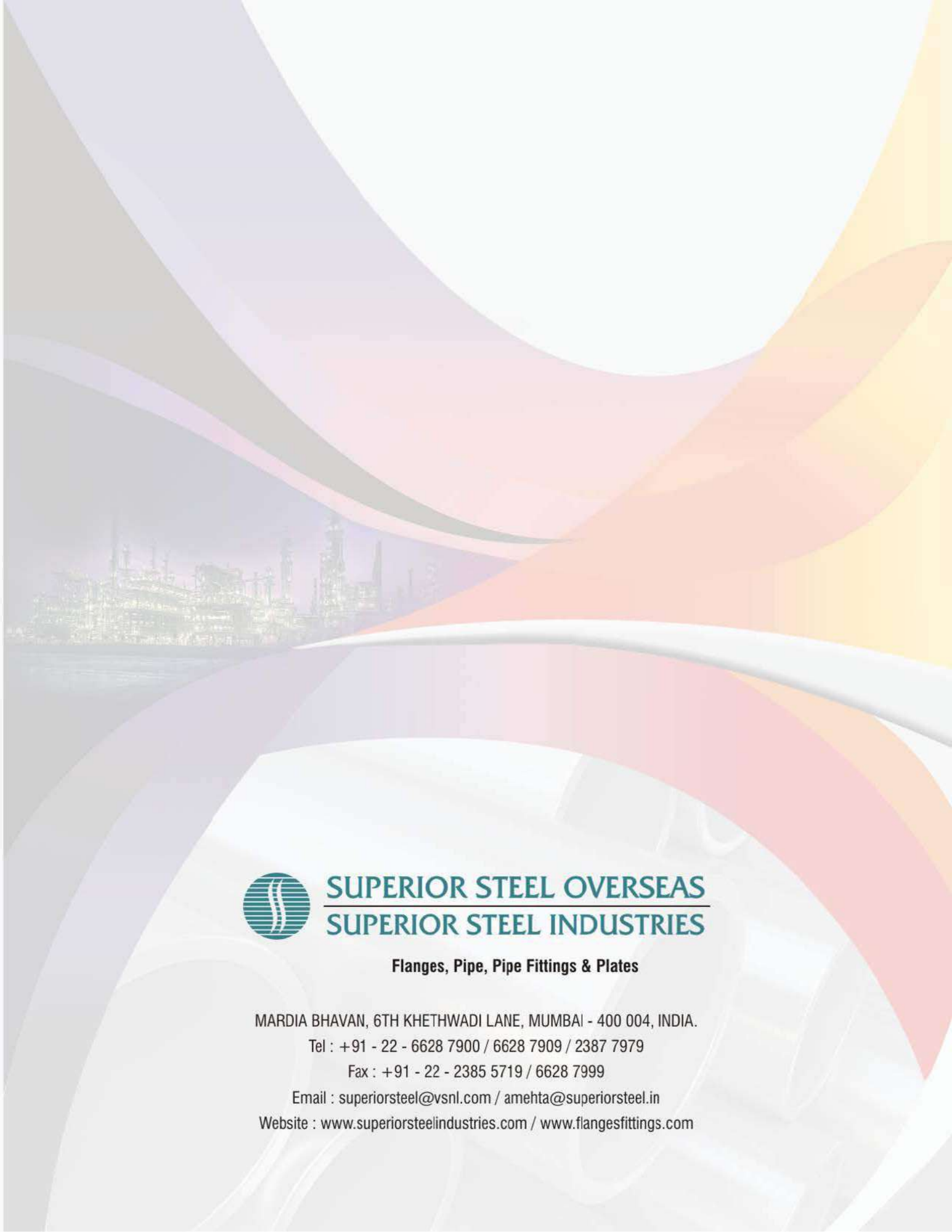

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