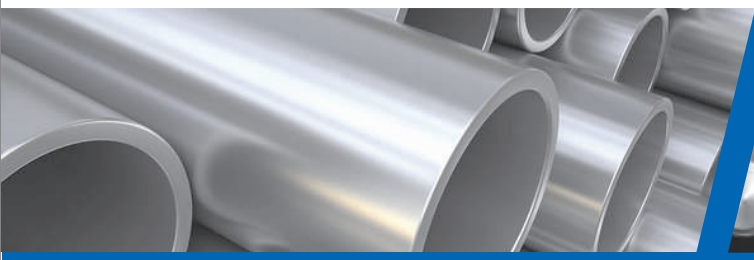
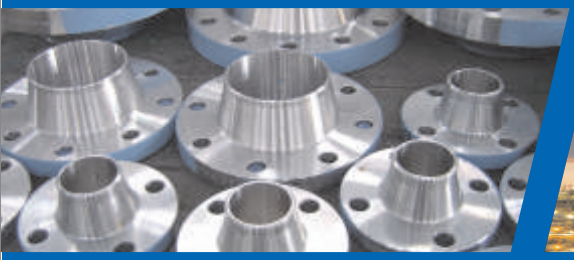
AVESTA
STEELS & ALLOYS





Petrochemical

Power Generation

Oil & Gas

Marine

Precision Engineering

Pharmaceutical

Medical

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SPECIALITY STEEL SOLUTION

AYESTA
STEELS & ALLOYS

Company Profile

Today we stand tall in our area of expertise with state of the art manufacturing facilities for manufacturing Buttweld Fittings, Forged Fittings, Flanges and Fasteners supplying various companies across industry verticals. We manufacture these Fittings and Flanges in Stainless Steel, Carbon Steel, Alloy Steel and High Nickel Alloys being our speciality.

We are also one of the leading importer stockists and suppliers of Pipes, Sheets, Plates and Coils, Rods etc in various grades, sizes and materials. Today we are a regular and preferred supplier to vasrious core Industries like Oil & Gas, Petrochemicals, Pharmaceuticals, Chemicals, General engineering, Power, Shipyard, Nuclear Energy and vsarious Goverment and semi Government Companies.

Our major advantage is our qualified workforce, we have pool of specilist in field of Technical, Sales & Logistic, who are fully committed to provide with best solution for your business & can help you solve all your procurement problems, we wish to have business with your esteem organization in order to render our services by providing you with quality at best prices and timely deliveries.

Quality Essential

OUR EXCELLENCE

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

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.

AYESTA STEELS & ALLOYS

NICKEL 200

Commercially pure (99.6%) wrought nickel with good mechanical properties and resistance to a range of corrosive media. Good thermal, electrical and magnetostrictive properties. Used for variety of processing equipment, particularly to maintain product purity in handling foods, synthetic fibers and alkalies. Standard product forms are round, flats, pipe, tube, plate, forging stock, strip and wire.

Limiting Chemical Composition %

Ni[a].....99.2 min	Mn.....0.35 min	S.....0.01 max
Cu.....0.25 min	C .....0.15 min	
Fe.....0.40 max	Fe.....0.35 max	

UNS N02200 BS 3072-3076 (Na11) ASTM B 160 B 163
B 725 B730 ASME SB. 160-SB. 163,
Boiler Code Sections III, VIII, IX

Specifications and Designations

DIN 17740, 17750-17754
Werkstoff Nr. 2.4060
2.4066

NICKEL 201

Commercially pure (99.6%) wrought nickel essentially the same as Nickel 200 but with a lower carbon content to prevent embrittlement by intergranular carbon temperatures over 600 oF (3015oC). Lower carbon content also reduces hardness Nickel 201 particularly suitable for cold-formed items. Standard product forms are round, flats, pipe, tube, plate, sheet, forging stock, strip and wire.

Limiting Chemical Composition %

Ni[a]..... 99.0 min	Mn..... 0.35 max	S.....0.01 max
Cu.....0.25 max	C .....0.02 max	
Fe..... 0.40 max	Fe.....0.35 max	

UNS N02201 BS 3072-3076 (Na12) ASTM B 160 B 163 B 725,
B730 ASME SB. 160-SB. 163, Boiler Code Sections III, VIII, IX

Specifications and Designations

SAE AMS 5553
DIN 17740, 17750-17754
Werkstoff Nr. 2.4061, 2.4068
VdTüV 345

MONEL 400

A nickel-copper alloy with high strength and excellent corrosion resistance in a range of media including sea water hydrofluoric, chemical and hydrocarbon processing equipment, valves, pumps, shafts, fitting, fasteners and heat exchangers. Standard product forms are round, hexagon, flats, forging stock, pipe, tube, plate, sheet, strip and wire.

Limiting Chemical Composition, %

Ni[a]..... 63.0 min	Mn ..... 2.0 max	Si ..... 0.5 max
Cu 28.0-34.0	C ..... 0.3 max	
Al ..... 2.5 max	S ..... 0.024 max	

UNS NO4400 MIL-T-1368,
BS 3072-3076 (NA 13)
ASTM B Boiler Code Section III, IV, VIII, IX
NACE MR-01-75

Specifications and Designations

MONEL IS REGISTERED TRADEMARK OF SPECIAL METAL LTD.

MIL-T-23520
Werkstoff Nr. 2.4360, 2.4361
QQ-N-281

MONEL K-500

Corrislon-hardenable nickel-copper alloy that combines on resistance of Monel alloy 400 with greater hardness. It also has low permeability and is to under -1 5PF (-101 T).Us ed for pump shah, and value instruments, doctor blades and scrapers, trim, fasteners, and marine propeller shafts. Product forms are round, hexagon, flats, forging tube, plate, sheet, strip and wire.

Limiting Chemical Composition, %

Ni[a]. .....63.0 min	Ti 0.35-0.85	Mn .....1.5 max
Cu 27.0-33.0	Fe ..... 2.0 max	S .....0.01 max
AL..... 2.30-3.15	C .....0.25 max	Si .....0.5 max

MONEL ALLOY K-500
BS 3072-3076 (NA 13)
ASTM B Boiler Code Section VIII
NACE MR-01-75

Specifications and Designations

MIL-N-24549 DIN 17743,
17752, 17752
WERKSTOFF NR. 2.4375
QQ-N-286

AYESTA STEELS & ALLOYS

INCONEL 600

A nickel-chromium alloy with good oxidation resistance at high temperatures and resistance to chloride-ion stress corrosion cracking corrosion by high-purity water and causing corrosion. Used for furnace components, in chemical and food processing, in nuclear engineering and for sparking electrodes. Standard product forms are round, hexagon, extruded section, flats, forging stock, pipe, tube, plate, sheet,strip and wire.

Limiting Chemical Composition %

Ni[a]..... 72.0 min
Cr 14.0-17.0
Fe 6.0- 10.0
C.....0.15 max
Mn..... 1.0 min
S .....0.015 max
S .....0.5 max
Cu.....0.5 max

Specifications and Designations

DIN 17742, 17750-17754
Werkstoff No. 2.4061

INCONEL 601

A nickel-chromium alloy with an addition of aluminm for out standing resistance to oxidation and other forms of high temperature corrosion. It also has high mechanical properties at elevated temperatures. Used for industrial furnaces; petrochemical and other process equipment; such as baskets, muffles and retorts, petrochemical and other process equiupment; and gas-turbine components, Standard product forms are round,flats, forging stock, pipe, tube, plate, sheet,strip and wire.

UNS NO6601 ASME Boiler Code Section I, III, VIII, IX
SAE AMS 5540, 5580, 5665 ASTM B 166-B 165 B 68

Ni[a]..... 58.0-63.0
Cr 21.0-25.0
Fe 1.0-1.7
Fe.....Remainder
C..... 0.10 max
Mn.....1.0 max
Si.....0.50 max
S.....0.015 max
Cu.....1.0max

Specifications and Designations

UNS NO6601
ASME Boiler Code Section VIII
SAE Ams 5715,5870
ASTM B 166-B 165
DIN 17742, 17750-17752
Werkstoff No. 2.4851

INCONEL-625

A nickel-chromium-molybdenum alloy with an addition of niobium that acts with the molybdenum to stiffen the alloy's matrix and thereby provide high strength without a strengthening heat treatment. The alloy resists a wide range of severely corrosive environments and is especially resistant to pitting and crevice corrosion. Used in chemical processing, aerospace and marine engineering, pollution control equipment and nuclear reactor. Standard product forms are round, flats, forging stock, extruded section, pipe, tube, plate, sheet, strip and wire.

Ni..... 58.0 min
Cr 20.0-23.0
Mo..... 8.0 - 10.0
Nb[a].....3.15 - 4.15
Fe .....5.0 max
C.....0.10 max
Mn.....0.50 max
Si .....0.50 max
S .....0.015 max
Al .....0.40 max
Ti..... 0.40 max
P.....0.015 max
Co[b].....1.0 max

*Plus Ta [b]if determined

Specifications and Designations

UNS N06625
BS 3072, 3074, 3076 WA21)
ASTM B443, B444, B446
B564, B704, B705, B761
ASME SB-443, SB-44, SB-446, SB-564
Boiler code Sections I, III, VIII, IX
SAE AMS 5561, 5599, 5666, 5337
DIN 17744, 17750-17752, 17754
Werkstoff No. 2.4856
NACE MR0175
AFMOR NC 22.0NB

INCONEL 800

A nickel-iron-chromium alloy with good strength and excellent resistance to oxidation and carburization in high temperature atmospheres. environments. The alloy maintains a stable, austenitic structure during prolonged exposure to high temperature. Used for process piping, heat exchangers, carburizing equipment, heating-element sheathing, and nuclear steam-generator tubing. Standard product forms are round, flats, forging stock, pipe, tube, plate, sheet, strip and wire.

Limiting Chemical Composition %

Ni.....30.0-35.0 min
Fe..... 39.5 min
Cr..... 19.0-23.0
C..... 0.10 max
Mn.....1.50 max
S..... 0.015 max
Si.....1.0 max
Cu.....0.75 max
Al.....0.15-0.60
Ti 0.15-0.60

UNS NO 8800
8S 3072-3076 (NA 15)
ASTM B-163, B-407-B409
ASME SB-163, SB 407-SB-409, SB-564
Boiler Code Section I, III, VII, IX

Specifications and Designations

S.E.W. 470
Werkstoff Nr. 14876
B514, B515, B564, B751

INCONEL 825

A nickel-chromium alloy with additions of molybdenum and copper. It has excellent resistance to both reducing and oxidizing acids to stress corrosion cracking and to localized attack such as pitting and crevice corrosion. The alloy is especially resistant to sulfuric and phosphoric acids. Used for chemical processing, pollution-control equipment, oil and gas well piping, nuclear fuel reprocessing, acid production and pickling equipment. Standard product forms are round, flats, forging stock, pipe, tube, plate, sheet, strip and wire.

Limiting Chemical Composition %

Ni..... 38.0-46.0
Fe ..... 22.0 min
Cr..... 19.5-23.5
Mo..... 2.5-3.5
Cu.....1.5-3.0
Ti.....0.6-1.2
C.....0.05 max
Mn..... 1.0 max
S .....0.03 max
Si ..... 0.5 max
Al .....0.2 max

*Plus Ta [b]if determined

Specifications and Designations

UNS NO 8825
BS 3072-3074, 3076 (NA16)
ASTM B-163, B-423, B-425
ASME SB-163, SB-423-SB-425
Boiler Code Section III,
VIII, IX
DIN 17744, 17750-17752, 17752
Werkstoff No. 24858
VdrUV 432
AFNOR NFe32 C200U

AVESTA STEELS & ALLOYS

INCONEL 800HT

A nickel-iron-chromium alloy having the same basic composition as INCONEL 800 but with significantly higher creep-rupture strength. The higher strength results fromclose control of the carbon, aluminium and titanium contents in conjuction with a higher-temperature anneal. Used in chemical and petrochemical processing in power plants for superheater and reheater tubing in industrial furnaces and not for heat-treating equipments, standard product forms are round, flats, flats, forging stock, pipe, tube, plate, sheet, strip and wire.

Limiting Chemical Composition %

Ni.....30.0-35.0	Mn.....1.50 max	Al.....0.15-0.60
Fe.....39.5 min	S.....0.015 max	Tl.....0.15-0.60
Cr.....19.0-23.0	Si.....1.0 max	Al+Ti....0.85-1.20
C.....0.06-0.10	Cu.....0.75 max	

Specifications and Designations

UNS NO 8811
ASTM B-163, B407- B409
B514, B515, B564
BS 3072, 3074, 3076 (NA15H)

ASME SB-163, SB-407-SB-409
SB-564, Boiler Code
Sections I, VIII
Workstoff Nr. 14876
SEW 471

HASTELLOY C - 276

A nickel-Molybdenum-chromium alloy with an addition of Tungsten having excellent corrosion resistance in a wide range of severe environments. The high molybdenum content makes the alloy especially ressiatant to pitting and crevice corrosion. The low carbon content minimizes carbide precipitation during welding to maintain corrosion resistance in as welded structures. Used in pollution control, chemical processing, paper and pulp production and waste treatment standard product forms are round, forging stock, tube, pipe, plate, sheet, strip ans wire.

Limiting Chemical Composition %

Ni.....Remainder	Co.....2.5 max	S.....0.03 max
Mo.....15.0-17.0	Mn.....1.0 max	Si.....0.08 max
Cr.....14.5-16.5	C.....0.01 max	
Fe.....4.0-7.0	V.....0.35 max	
W.....3.0-4.5	P.....0.04 max	

Specifications and Designations

UNS N10276
ASTM B-574, B-575, B-619
B-622, B-626, B-751
NACE MR-01-75
DIN 17744, 17750-17752

ASME SB-574, SB-575, SB-619
SB-622,SB-626, Boiler Code
Sections I,III, VIII, IX.
Workstoff Nr. 2.4819.

HASTELLOY C - 22

(UNS N06022; W. Nr. 2, 4602; NiC21Mo14W) is a fully austenitic advanced temperatures. This alloy provides exceptional resistance to general corrosion, pitting, crevice corrosion, chemical/petrochemical processing, pollution control (flue gas desulfurization), power, marine, pulp and paper processing and waste disposal industries used in pollution control, chemical processing pulp and paper processing, and waste disposal industries used in pollution control, chemical processing pulp and paper production and waste treatment standard product forms are round, forging stock, tube, pipe, plate, sheet, strip and wire

Limiting Chemical Composition %

Ni.....Remainder	Cr.....20.0-22.5	Mo.....12.5-14.5
Fe.....2.0-3.5	W.....2.5-3.5	Co.....2.5 max
V.....0.35 max	C.....0.015max	
Mn.....0.05 max	S.....0.02 max	
Si.....0.08 max	P.....0.02 max	

Specifications and Designations

UNS NO 6022
ASTM B-574, B-575, B-619
B-622, B-626
DIN 17744, 17750

ASME SB-574, SB-575, SB-619
SB-622, SB-626
Section VIII Div.I
Werkstoff Nr. 2.4602

***Hastelloy is a registered trademark of Haynes International**

NICKEL ALLOYS

SMO - 254

Avesta Sheffield 254 SMO is an austenitic stainless Steel which due to its high Molybdenum possesses very high resistance to pitting and crevice corrosion. The steel grade was developed by Avesta Sheffield for use in Halide-containing environments such as seawater. 250 SMO also shows good resistance to uniform corrosion and especially in acids containing halides. this steel grade is superior to conventional stainless steel.

254 SMO is a registered trademark of Avesta Sheffield AB.

The high levels of molybdenum in particular but also of Chromium and Nitrogen endow 254 SMO with extremely good resistance to pitting and crevice corrosion. The addition of copper provides improved resistance in certain acids. Further more, due to its relatively high nickel content in combination with the high levels of chromium and molybdenum 254 SMo possesses good resistance to stress corrosion cracking

Limiting Chemical Composition %

Ni.....I...17.5-18.50	Mn.....1.0
Mo.....6.00-6.50	Cu.....0.50-1.00
Cr.....19.50-20.50	S.....0.01
P.....0.03	Si.....0.80
C.....0.02	N.....0.18-0.22

AYESTA STEELS & ALLOYS

Alloy - 904L

904L is a non-stabilised lowcarbon high alloy austenitic stainless steel, The addition of copper to this grade gives greatly improved resistance to strong reducing acids. particularly sulphuric acid. It is also highly resistant to chloride attack-both pitting / crevice corrosion and stress corrosion and stress corrosion cracking.

Limiting Chemical Composition %

Ni.....23.0-28.0
Mo.....4.00-5.00
Cr.....19.0-23.0
P 0.045
C.....0.020 max
Mn.....2.0 max
Cu.....1.0-2.0
S.....0.035 max
Si.....1.00 max
C.....0.020

Alloy - 20

Alloys 20 is one of the so-called "super" stainless steels that was designed for maximum resistance to acid attack, It's nickel, chromium, molybdenum and copper content contribute to its overall resistance to chloride on stress corrosion cracking and general pitting attack. The alloy is stabilized with columbium to minimize carbide precipitation during welding. It has good mechanical properties and can be fabricated with comparative ease. Although the alloy was designed for use in sulfuric acids related industries, it finds wide usage throughout the chemical processing industry. It also is used in sulfuric acid related industries, it finds wide usage throughout the chemical processing industry. It also is used for processing pharmaceuticals, food, gasoline, solvents, plastics, explosives, synthetic fibres and many other products.

Limiting Chemical Composition %

Ni.....32-38.0
Mo.....2.00-3.00
Cr..... 19.0-21.0
p.....0.045 max
C.....0.07 max
Mn.....2.0 max
Cu.....3.0 - 4.0
Fe..... Bal
S.....0.035 max
SI.....1.00 max
Cb.....1.00 max

TITANIUM

TITANIUM GRADE 1

Grade 1 has very good weld ability. Being substantially single-phase material, the micro structure of the alpha phase is not affected greatly by thermal treatments or welding temperatures. Therefore, themechanical properties of a correctly welded joint are equal to, or exceed those of the parent metal and show good ductility.

TITANIUM GRADE 2

Grade 2 has very good weld ability. Being substantially single phase material, the micro structure of the alpha phase is not affected greatly by thermal treatments or welding temperatures. Therefore, the mechanical properties of a correctly welded joint are equal to, or exceed those of the parent metal and show good ductility.

Compressor blades, discs and rings for jet engines, aircraft components, pressure vessels, rocket engine cases, offshore pressure vessels.

TITANIUM GRADE 5

Since the two-phase micro ctructure of alpha-beta titanium alloys responds to thermal treatment, the temperatures encountered during the welding cycle can affect the material being welded.

CUPRO - NICKEL (90 /10)

Widely used in condensers, coolers and heat exchangers, where corrosion resistance and erosion is paramount, yet maintaining a high conductivity rate. To be used preferably in marine conditions, forms a protective film which is multi layered in flowing sea water. Resist marine bifouling cooling water speed 2.5m/s working temperature approx. 250 deg.C

Ni.....10
Fe.....1
Mn.....
Cn.....102
Mn.....2.0 max

CUPRO - NICKEL (70 /30)

Improved corrosion resistance and almost insensitive to stress corrosion, this alloy will give superior result in high velocity polluted water including sea water. A reduced thermal conductivity level but will retain at moderately increases temperatures

Ni..... 29 - 32
Fe..... 0.5 - 1.5
Mn..... 0.4 - 1
Cu..... Remaining

AYESTA STEELS & ALLOYS

Manufacturing Process

SEAMLESS PIPES & TUBES

Pilgering

In cold Pilgering process using full link die and tapper mandral to reduce the cross section by upto 90%, because the process relies on large number of small forming steps.

Cold Pilgering are longitudinal cold rolling process that reduce the diameter and wall thickness of metal tube in one process step.

By cold Pilgering process surface finish achieved better than cold drawing finish and improved micro-structure grain size.

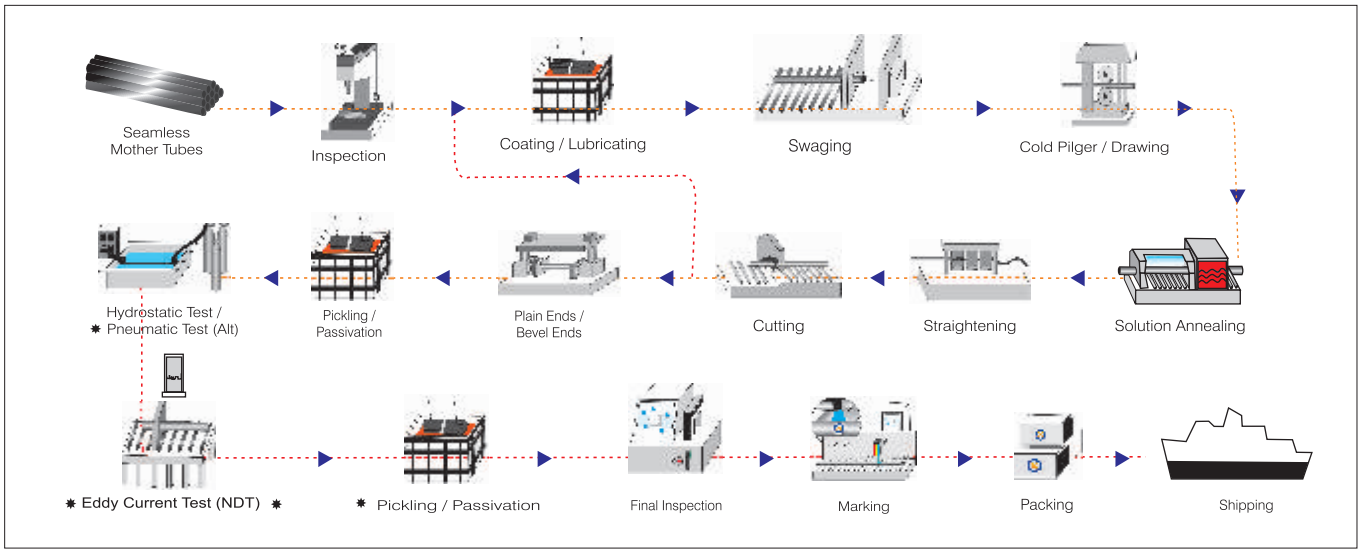
Cold Drawing

In cold drawing process raw material tubes are coated with some special chemical or applied some special lubricant oil

In cold drawing process the tubes are pulled through tungsten carbide die and fixed plug in side the tubes resulting in reduced tube diameter and wall thickness corresponding increase in tube length

Our capacity of drawing are OD 6 mm to 114.3 mm & thickness are 0.7 mm to 9 mm

- Process of Seamless Stainless Steel Tube / Pipe Manufacturing



AYESTA STEELS & ALLOYS

Stainless,Carbon & Alloy Steel Seamless Pipe,Schedule Dimension

Nominal pipe size	O, D mm	10	20	30	STD	40	60	XS	80	100	120	140	160	XXS
1/8	10,30				1,73 0,37	1,73 0,37		2,41 0,47	2,41 0,47					
1/4	13,70				2,24 0,63	2,24 0,63		3,02 0,80	3,02 0,80					
3/8	17,10				2,31 0,84	2,31 0,84		3,20 1,10	3,20 1,10					
1/2	21,30				2,77 1,27	2,77 1,27		3,73 1,62	3,73 1,62				4,78 1,95	7,47 2,55
3/4	26,70				2,87 1,69	2,87 1,69		3,91 2,20	3,91 2,20				5,56 2,90	7,82 3,64
1	33,40				3,38 2,50	3,38 2,50		4,55 3,24	4,55 3,24				6,35 4,24	9,09 5,45
1 1/4	42,20				3,56 3,39	3,56 3,39		4,85 4,47	4,85 4,47				6,35 5,61	9,70 7,77
1 1/2	48,30				3,68 4,05	3,68 4,05		5,08 5,41	5,08 5,41				7,14 7,25	10,15 9,56
2	60,30				3,91 5,44	3,91 5,44		5,54 7,48	5,54 7,48				8,74 11,11	11,07 13,44
2 1/2	73,00				5,16 8,63	5,16 8,63		7,01 11,41	7,01 11,41				9,53 14,92	14,02 20,39
3	88,90				5,49 11,29	5,49 11,29		7,62 15,27	7,62 15,27				11,13 21,35	15,24 27,68
3 1/2	101,60				5,74 13,57	5,74 13,57		8,08 18,63	8,08 18,63				- -	- -
4	114,30				6,02 16,07	6,02 16,07		8,56 22,32	8,56 22,32		11,13 28,32		13,49 33,54	17,12 41,03
5	141,30				6,55 21,77	6,55 21,77		9,53 30,97	9,53 30,97		12,70 40,28		15,88 49,11	19,05 57,43
6	168,30				7,11 28,26	7,11 28,26		10,97 42,56	10,97 42,56		14,27 54,20		18,26 67,56	21,95 79,22
8	219,10		6,35 33,31	7,04 36,81	8,18 42,55	8,18 42,55	10.30 53.10	12,70 64,64	12,70 64,64	15,09 75,92	18,26 90,44	20,62 100,92	23,01 111,27	22,23 107,92
10	273,10		6,35 41,77	7,80 51,03	9,27 60,31	9,27 60,31	12.70 81.50	12,70 81,55	15,09 96,01	18,26 114,75	21,44 133,06	25,40 155,15	28,58 172,33	25,40 155,15
12	323,90		6,35 49,73	8,38 65,20	9,53 73,88	10,31 79,73	14.30 109.00	12,70 97,46	17,48 132,08	21,44 159,91	25,40 186,97	28,58 208,14	33,32 238,76	25,40 186,97
14	355,60	6,35 54,69	7,92 67,90	9,53 81,33	9,53 81,33	11,13 94,55	15.10 126.40	12,70 107,39	19,05 158,10	23,83 194,96	27,79 224,65	31,75 253,56	35,71 281,70	
16	406,40	6,35 62,64	7,92 77,83	9,53 93,27	9,53 93,27	12,70 123,30	16.70 160.00	12,70 123,30	21,44 203,53	26,19 245,56	30,96 286,64	363,53 333,19	40,49 365,35	
18	457,00	6,35 70,57	7,92 87,71	11,13 122,38	9,53 105,16	14,27 155,80	19.00 206.00	12,70 139,15	23,83 254,55	29,36 309,62	34,93 363,56	39,67 408,26	45,24 459,37	
20	508,00	6,35 78,55	9,53 117,15	12,70 155,12	9,53 117,15	15,09 183,42	20.60 248.5	12,70 155,12	26,19 311,17	32,54 381,53	38,10 441,49	44,45 508,11	50,01 564,81	
22	559,00	6,35 86,54	9,53 129,13	12,70 171,09	9,53 129,13	- -	22.20 294.00	12,70 171,09	28,58 373,83	34,93 451,42	41,28 527,02	47,63 600,63	53,98 672,26	
24	610,00	6,35 94,53	9,53 141,12	14,27 209,64	9,53 141,12	17,48 255,41	24.60 355.00	12,70 187,06	30,96 442,08	38,89 547,71	46,02 640,03	52,37 720,15	59,54 808,22	
26	660,00	7,92 127,36	12,70 202,72	- -	9,53 152,87	- -		12,70 202,72						
28	711,00	7,92 137,32	12,70 218,69	15,88 271,21	9,53 164,85	- -		12,70 218,69						
30	762,00	7,92 147,28	12,70 234,67	15,88 292,18	9,53 176,84	- -		12,70 234,67						
32	813,00	7,92 157,24	12,70 250,64	15,88 312,15	9,53 188,82	17,48 342,91		12,70 250,64						
34	864,00	7,92 167,20	12,70 266,61	15,88 332,12	9,53 200,31	17,48 364,90		12,70 266,61						
36	914,00	7,92 176,96	12,70 282,27	15,88 351,70	9,53 212,56	19,05 420,42		12,70 282,27						
38	965,00				9,53 224,54			12,70 298,24						
40	1016,00				9,53 236,53			12,70 314,22						
42	1067,00				9,53 248,52			12,70 330,19						
44	1118,00				9,53 260,50			12,70 346,16						
46	1168,00				9,53 272,25			12,70 351,82						
48	1219,00				9,53 284,24			12,70 377,79						

Nominal pipe size	FIGURES BASED ON AUSTENITIC STEEL				SHIPPING
	5S	10S	40S	80S	Vol/m m³
1/8		1,24 0,28	1,73 0,36	2.41 0.48	0,0001
1/4		1,65 0,51	2,24 0,64	3.02 0.82	0,0002
3/8		1,65 0,64	2,31 0,86	3.20 1.12	0,0003
1/2	1,65 0,82	2,11 1,01	2,77 1,30	3.73 1.65	0,0004
3/4	1,65 1,04	2,11 1,31	2,87 1,71	3.91 2.24	0,0007
1	1,65 1,33	2,77 2,13	3,38 2,55	4.55 3.29	0,0011
1 1/4	1,65 1,68	2,77 2,76	3,56 3,46	4.85 4.56	0,0018
1 1/2	1,65 1,95	2,77 3,17	3,68 4,13	5.08 5.51	0,0023
2	1,65 2,24	2,77 4,01	3,91 5,54	5.54 7.63	0,0036
2 1/2	2,11 3,77	3,05 5,36	5,16 8,81	7.01 11.64	0,0053
3	2,11 4,60	3,05 6,59	5,49 11,52	7.62 15.59	0,0079
3 1/2	2,11 5,29	3,05 7,55	5,74 13,84	8.08 19.01	0,0103
4	2,11 5,96	3,05 8,52	6,02 16,40	8.56 22.77	0,0130
5	2,77 9,67	3,40 11,82	6,55 22,20	9.53 31.59	0,0199
6	2,77 11,55	3,40 14,13	7,11 28,83	10.97 43.42	0,028
8	2,77 15,09	3,76 20,37	8,18 43,39	12.70 65.95	0,048
10	3,40 23,08	4,19 28,34	9,27 61,52	12.70 83.19	0,074
12	3,96 31,89	4,57 36,73	9,53 75,32	12.70 99.43	0,104
14	3,96 35,06	4,78 42,14			0,126
16	4,19 42,41	4,78 48,26			0,165
18	4,19 47,77	4,78 54,36			0,208
20	4,78 60,46	5,54 70,00			0,258
22	4,78 66,57	5,54 77,06			0,312
24	5,54 84,16	6,35 96,37			0,372
26					0,435
28					0,505
30	6,35 120,72	7,92 150,36			0,580
32					0,660
34					0,746
36					0,835
38					0,931
40					1,032
42					1,138
44					1,249
46					1,364
48					1,485

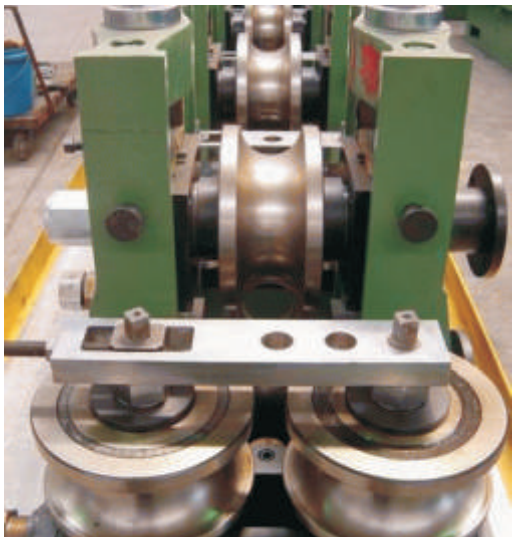
Notes : 1) NPS (Normal Piper Size) is a dimensionless designator that has been substituted in the customary units section for the previous term inch Nominal Size.
2) Black- Thickness of Pipe RED - Pipe weight in kg per meter.
3) STD = Standard, XS = Extra Strong, XXS = Double Extra Strong.

AYESTA STEELS & ALLOYS

Manufacturing Process

Welded Pipes & Tubes

Welded tubes making operation are carried out on the tube mill. Cold / Hot stainless steel strip are slitted to the required width as per the diameter of tube to be formed. The strips are then feed to the uncoilar from where its passes through series of rollers & continuously formed in to a tubular shape and welded by tungsten -inert -gas (TIG) welding. It is highly precession complete automated process where the edge of script are heated and fused together under a protect in atmosphere of argon gas through a non consumable electrode without using any filler metal. The Tubes also pass through a series of sizes rolls to ensure ovality, tolerance and then are cut to length. It is then Annealed, Straightened, Hydro-Tested, Pickled and passivated. The Tubes then undergo a 100% visual and dimensional inspection. Then the tubes are marked and suitably packed before dispatch.

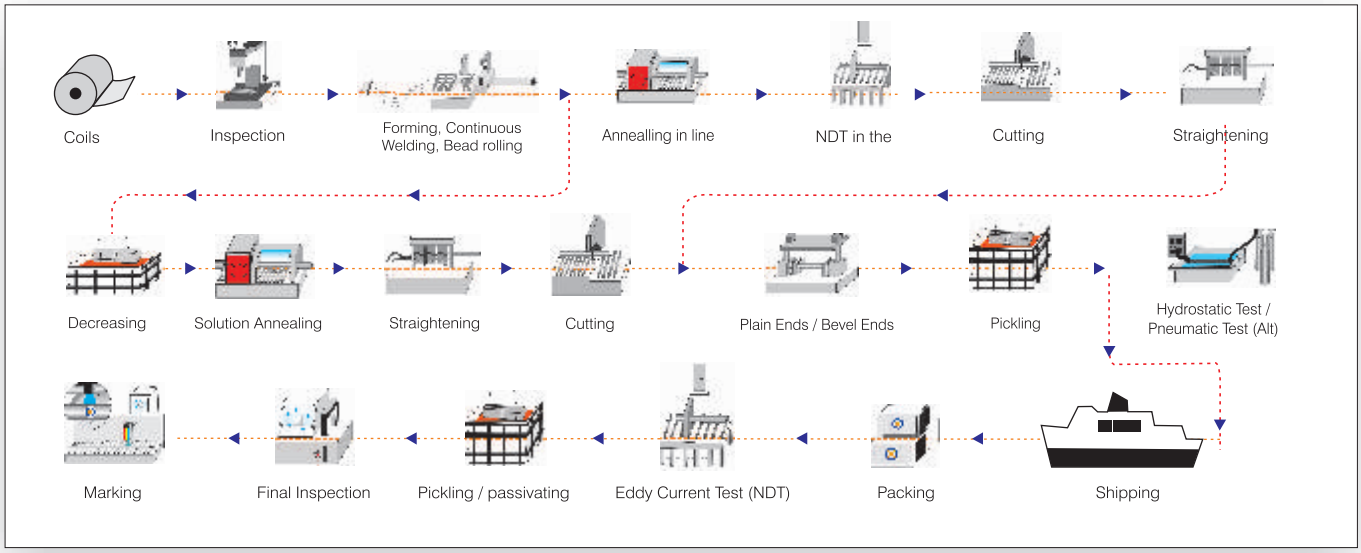


Our Product Range

STAINLESS STEEL SEAMLESS / ERW PIPES, TUBES & U-TUBES.

Size	6 mm OD to 114.3 mm OD
Thickness	0.7 mm to 9.0 mm
ASTM	ASTM A-213, ASTM A-249, A-268, A-270, A-312
Grade	TP-202, TP-304/L/H, TP-316/L/H/Ti, TP-317L, TP-321/H, TP-347/H, TP-409/L, TP-410/L, TP430.
Specialized	Capillary, Instrumentation, Surgical, Boilers & Heat Exchanger Pipes & Tubes

- ## Process of Welded Stainless Steel Tube / Pipe



AYESTA STEELS & ALLOYS

Chemical Composition Of S. S. Pipes & Tubes

Grade	UNS Design-ation	Composition %															
		Carbon max	Manga-nese max	Sulphur max	Phos-phorus max	Silicon	Nickel	Chromium	Molyb-denum	Tita-nium	Colum-blum plus Tantalum	Tanta-lum max	Nitrogen[C]	Vana-dium	Copper	Cerlum	Bom
TP304	S30400	0.08	2.00	0.040	0.030	0.75 max	8.00-11.0	18.0-20.0	--	--	--	--	--	--	--	--	--
TP304H	S30409	0.04-0.10	2.00	0.040	0.030	0.75 max	8.00-11.0	18.0-20.0	---	---	---	---	---	---	---	---	
TP304L	S30403	0.035	2.00	0.040	0.030	0.75 max	8.00-13.0	18.0-20.0	---	---	---	---	---	---	---	---	
TP304N	S30451	0.08	2.00	0.040	0.030	0.75 max	8.00-11.0	18.0-20.0	---	---	---	---	0.10-0.16	---	---	---	
TP304LN	S30453	0.035	2.00	0.040	0.030	0.75 max	8.00-11.0	18.0-20.0	---	---	---	---	0.10-0.18	---	---	---	
TP309Cb	S30940	0.08	2.00	0.045	0.030	0.75 max	12.0-16.0	22.0-24.0	0.75 max	---	10 x C min 1.10 max	---	---	---	---	---	
TP309H	S30909	0.04-0.10	2.00	0.040	0.030	0.75 max	12.0-15.0	22.0-24.0	---	---	---	---	---	---	---	---	
TP309HCb	S3041	0.04-0.10	2.00	0.045	0.030	0.75 max	12.0-16.0	22.0-24.0	0.75 max	---	10 x C min 1.10 max	---	---	---	---	---	
TP309S	S30908	0.08	2.00	0.045	0.030	0.75 max	12.0-15.0	22.0-24.0	0.75 max	---	---	---	---	---	---	---	
TP310Cb	S31040	0.08	2.00	0.045	0.030	0.75 max	19.0-22.0	24.0-26.0	0.75 max	---	10 x C min 1.10 max	---	---	---	---	---	
TP310H	S31009	0.04-0.10	2.00	0.040	0.030	0.75 max	19.0-22.0	24.0-26.0	---	---	---	---	---	---	---	---	
TP310HCb	S31041	0.04-0.10	2.00	0.045	0.030	0.75 max	19.0-22.0	24.0-26.0	0.75 max	---	10 x C min 1.10 max	---	---	---			
TP310S	S31008	0.08	2.00	0.045	0.030	0.75 max	19.0-22.0	24.0-26.0	0.75 max	---	---	---	---	---		---	
	S31272	0.08-0.12	1.5 2.00	0.030	0.015	0.3-0.7	14.0-16.0	14.0-16.0	1.0-1.4	0.3-0.6							0.04 0.00
TP316	S31600	0.08	2.00	0.040	0.030	0.75 max	11.0-14.0	16.0-18.0	2.00-3.00	---	---	---	---	---	---	---	
TP316H	S31609	0.04-0.10	2.00	0.040	0.030	0.75 max	11.0-14.0	16.0-18.0	2.00-3.00	---	---	---	---	---	---	---	
TP316L	S31603	0.035	2.00	0.040	0.030	0.75 max	10.0-15.0	16.0-18.0	2.00-3.00	---	---	---	---	---	---	---	
TP316N	S31651	0.08	2.00	0.040	0.030	0.75 max	11.0-14.0	16.0-18.0	2.00-3.00				0.10-0.16	--	---	---	
TP316LN	S31653	0.035	2.00	0.040	0.030	0.75 max	11.0-14.0	16.0-18.0	2.00-3.00	---	---	---	0.10-0.18	---	----	---	
TP317	S31700	0.08	2.00	0.040	0.030	0.75 max	11.0-14.0	18.0-20.0	3.00-4.00	---	---	---	---	---	---	---	
TP317L	S31703	0.035	2.00	0.040	0.030	0.75 max	11.0-15.0	18.0-20.0	3.00-4.00	---	---	---	---	---	---	---	
TP321	S32100	0.08	2.00	0.040	0.030	0.75 max	9.00-13.0	17.0-20.0	---	F	---	---	---	---	---	---	
TP321H	S32109	0.04-0.10	2.00	0.040	0.030	0.75 max	9.00-13.0	17.0-20.0	---	G	---	---	---	---	---	---	
TP347	S34700	0.08	2.00	0.040	0.030	0.75 max	9.00-13.0	17.0-20.0	--	---	H	---	---	---	---	---	
TP347H	S34709	0.04-0.10	2.00	0.040	0.030	0.75 max	9.00-13.0	17.0-20.0	--	---	I	---	---	---	---	---	---
TP347LN	S34751	0.005-0.020	2.00	0.040	0.030	0.75 max	9.00-13.0	17.0-20.0	---	---	0.2-0.5[H]	---	0.06-0.10	---	---	---	
TP348	S34800	0.08	2.00	0.040	0.030	0.75 max	9.00-13.0	17.0-20.0	---	---	H	0.10	---	--	---	---	
TP348H	S34809	0.04-0.10	2.00	0.040	0.030	0.75 max	9.00-13.0	17.0-20.0	---	---	I	0.10	---	--	---	---	
TPXM 10	S21900	0.08-1000	8.00-10.00	0.040	0.030	1.00 max	5.50-7.50	19.0-21.5	---	---	---	---	0.15-0.40	---	---	---	
TPXM 11	S21904	0.04-10.00	8.00-10.00	0.040	0.030	1.00 max	5.50-7.50	19.0-21.5	---	---	---	---	0.15-0.40	---	---	---	
TPXM-15	S38100	0.08	2.00	0.030	0.030	1.50-2.50	17.5-18-5	17.0-19.0	---	---	---	---	---	---	---	---	
TPXM-19	S20910	0.060	4.00-6.00	0.040	0.030	1.00 max	11.5-13.5	20.5-3.00	1.50-3.00	---	0.10-0.30	---	0.20-0.40	0.10-0.30	---	---	
TPXM-29	S24000	0.080	11.5-14.5	0.060	0.030	1.00 max	2.25-3.75	17.0-19.0	---	---	--	---	0.20-0.40	---	---	---	
---	S31254	0.020	1.00	0.030	0.010	0.80 max	17.5-18.5	19.5-20.5	6.00-6.50	---	---	---	0.18-0.22	---	0.50-1.00		
---	S30615	0.16-0.24	2.00	0.030	0.030	3.2-4.0	13.5-16.0	17.0-19.5	---	---	---	---	---	---	---	---	
---	S30815	0.05-0.10	0.80	0.040	0.030	1.40-2.00	10.0-12.0	20.0-22.0	---	---	---	---	0.14-0.20	---	---	0.03-0.08	
---	S31050	0.025	2.00	0.020	0.015	0.4	20.5-23.5	24.0-26.0	1.6-2.6	---	---	---	0.09-0.15	---	---	---	
---	S30600	0.018	2.00	0.020	0.020	3.7-4.3	14.0-15.5	17.0-18.5	0.20 max	---	---	---	---	---	0.50 max	---	
---	S31725	0.03	2.00	0.040[J]	0.030	0.75	13.5-17.5	18.0-20.0	4.0-5.0	---	---	---	0.10 max	---	0.75 max	---	
---	S31726	0.03	2.00	0.040[J]	0.030	0.75	13.5-17.5	17.0-20.0	4.0-5.0	---	---	---	0.10-0.20	---	0.75 max	---	
---	S32615	0.07	2.00	0.045	0.030	4.8-6.0	19.0-22.0	16.5-19.5	0.3-1.5	---	---	---	---	---	1.5-2.5	---	
---	S33228	0.04-0.08	1.00	0.020	0.015	0.30 max	31.0-33.0	26.0-28.0	---	---	0.6-1.0	---	---	---	---	0.05-0.10	---
---	S24565	0.03	5.0-7.0	0.030	0.010	1.00max	16.0-18.0	23.0-25.0	4.0-5.0	---	0.1 max		0.04-0.6	---	---	---	---
---	S30415	0.4-0.06	0.80	0.045	0.030	1.00-2.00	9.00-10.0	18.0-19.0	---	---	---	---	0.12-0.16	---	---	0.03-0.08	
---	S32654	0.020	2.00-4.00	0.030	0.005	0.50 max	21.0-23.0	24.0-25.0	7.00-8.00	---	---	---	0.45-0.55	---	0.030-0.60	---	
---	S35315	0.04-0.08	2.00	0.045	0.030	0.75	34.0-36.0	24.0-26.0	---	---	---	---	0.12-0.18	---	---	0.03-0.08	
--- ---	N08367	0.030	2.00	0.030	0.030	1.00 max	23.50-25.50	20.00-22.00	6.00-7.00	---	---	---	0.18-0.25	---	0.75 max	---	---

New designation established in accordance with Practice E 527 and SAE J 1086.

Maximum, unless otherwise indicated.The method of analysis for nitrogen shall be a matter of agreement between the purchaser and manufacturer.

For welded TP316, TP316N, TP316LN, and TP316H pipe, the nickel range shall be 10.0-14.0 %. For small diameter or thin walls or both, where many drawing passes are required, a carbon maximum of 0,040 % is necessary in grades TP304L and TP316L. Small diameter tubes are defined as those less 0.500 in (12.7mm) in outside diameter and light wall tubes as those less than 0.049 in (1.20 mm) in average wall thickness (1.10 mm) in minimum wall thickness

The titanium content shall be not less than five times the carbon content and not more than 0.70 %. The titanium content shall be not be less than four times the carbon content and not more than 0.60 %. The Columblum plus titanium content shall be not less than ten times carbon content and not more than 1.00 %.

The Columblum plus titanium content shall be not less than eight times carbon content and not more than 1.00 %.

For welded pipe, the phosphorus maximum shall be 0.045 %. Grade S34751 shall have a columblum (Nioblum) plus tantalum content of not less than 15 times the carbon content.

AYESTA STEELS & ALLOYS

Carbon Steel,Alloy Steel Low Tem,Pipe And Tube Specification

CHEMICAL									MECHANICAL PROPERTIES			SPECIFIC REQUIREMENT
									TENSILE STRENGTH	YIELD STRESS	ELONGATION	
SPECIFICATION	WT	C%	Mn %	P % MAX	S% MAX	Si%	Cr%	Mo%	Mpa	Mpa	50mm MIN Longitudinal	
ASTM A53/A	AW	0.25MAX	0.95MAX	0.050	0.045	-	-		330MIN	205MIN	36	
ASTM A53/B	AW	0.30MAX	1.20MAX	0.050	0.045	-	-		415MIN	240MIIN	29/5	Cr Mo Cu Ni Va
ASTM /A 106/A	AW	0.25MAX	0.27-0.93	0.035	0.025	0.10MIN	0.40MAX	0.15MAX	330MIN	205MIN	35/2	40 15 40 40 08
ASTM A 106/B	AW	0.35MAX	0.29-1.06	0.035	0.035	0.10MIN	0.40MAX	0.15MAX	415 MIN	240MIN	30/22	Five elements not to exceed 1%
ASTM A 106/C	AW	0.35MAX	0.29-1.06	0.035	0.035	0.10MIN	0.40MAX	0.15MAX	485MIN	275MIN	30/22	
ASTM A179	MW	0.06~018	0.27-0.63	0.035	0.035	-	-		325MIN	180MIN	35.0	Hardness 72 HRB Max
ASTMA214	MW	0.18MAX	0.27-0.63	0.035	0.035	-	-		385MIN	180MIN	35.0	Hardness 72 HRB Max
ASTM A192	MW	0.06-0.18	0.27-0.63	0.035	0.035	0.25MAX	-		325MIN	180MIN	35.0	Hardness 77 HRB Max
ASTM a209/T1	MW	0.10-0.20	0.30-0.80	0.025	0.025	0.10-0.50	-	0.44-0.65	380MIN	205MIN	30/22	Hardness 80 HRB Max
ASTM A209/T1a	MW	0.15-0.25	0.30-0.80	0.025	0.025	0.10-0.50	-	0.44-0.65	365MIN	195MIN	30/22	Hardness 81 HRB Max
ASTM A209/T1b	MW	0.14MAX	0.30-0.80	0.025	0.025	0.10MIN	-	0.44-0.65	415MIN	220MIN	30/22	Hardness 77 HRB Max
ASTM A210/A-1	MW	0.27max	0.93max	0.035	0.035	0.10min	-		415MIN	255MIN	30/22	Hardness 79 HRB Max
ASTMA210/C	MW	0.35MAX	0.23-1.06	0.035	0.035	0.10MIN	-		485MIN	275MIN	30/22	Hardness 89 HRB Max
ASTM A213/T2	MW	0.10/0.20	0.30-0.61	0.025	0.025	0.10-0.30	0.50-0.81	0.44-0.65	415MIN	205MIN	30/22	Hardness 85 HRB Max
ASTM A213/T5	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	4.00-6.00	0.44-0.65	415MIN	205MIN	30/22	Hardness 85 HRB Max
ASTM A213/T11	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	1.00-1.50	0.44-0.65	415MIN	205MIN	30/22	Hardness 85 HRB Max
ASTM A213/T12	0.05	0.15MAX	0.30-0.61	0.025	0.025	0.50MAX	0.80-1.25	0.44-0.65	415MIN	220MIN	30/22	Hardness 85 HRB Max
ASTM A213/T22	0.05	0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	1.90-2.60	0.87-1.13	415MIN	205MIN	30/22	Hardness 85 HRB Max
ASTM A333/3	AW	0.19MAX	0.31-0.64	0.025	0.025	0.18-0.37	Ni	3.18-3.82	380MIN	205MIN	35/25	
ASTM A333/6	AW	0.30MAX	0.29-1.06	0.025	0.025	0.10MIN	–		415MIN	240MIN	30/22	IMPACT AS -50f
ASTM A334/3	AW	0.19MAX	0.31-0.64	0.025	0.025	0.18-0.37	Ni	3.18-3.82	380MIN	205MIN	35/28	FOR 40X10/18/1490 HRB MAX
ASTM A334/6	MW	0.30MAX	0.9-1.06	0.025	0.025	0.10MIN	-		415MIN	240MIN	30/22	50 f 40X10/18/14
ASTM A335/P1	AW	0.10-0.20	0.30-0.80	0.025	0.025	0.10-0.50-	-	0.40-0.65	380MIN	205MIN	30/22	
ASTM A335/P2	AW	0.10-0.20	0.30-0.61	0.025	0.025	0.10-0.30	0.50-0.81	0.40-0.65	380MIN	205MIN	30/22	
ASTM A335/P5	AW	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	4.00-6.00	0.40-0.65	415MIN	205MIN	30/22	
ASTM A335/P11	0.05	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	1.00-1.50	0.400-65	415MIN	205MIN	30/22	
ASTM A335/P12	0.05	0.15MAX	0.30-0.61	0.025	0.025	0.50MAX	0.80-1.25	0.40-0.65	415MIN	205MIN	50/22	
ASTM A335/P22	0.05	0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	1.90-2.60	0.87.1.13	415MIN	205MIN	30/22	
BS/3059/1/33		0.15Max	0.30-0.70	0.050	0.050	-	-		324-441	186MIN	25	
BS/3059/2/33		0.15MAX	0.400.70	0.050	0.050	0.10-0.35	-		324-441	186MIN	21	
BS/3059/245		0.120.18	0.90-1.20	0.035	0.035	0.10-0.35	-		441-560	245MIN	22	
BS/3059/2/620		0.10-0.15	0.40-0.70	0.040	0.040	0.10-0.35	0.70-1.10	0.45-0.65	441-618	235MIN	22	
DIN/17175/ST35.8		0.17MAX	0.40MIN	0.040	0.040	0.35MAX	-		340-441	235MIN	25	
DIN/17175/ST45.8		0.22MAX	0.45MIN	0.040	0.040	0.10-0.35	-		441-540	255 MIN	25	
DIN/17175/15MO3		0.12-0.20	0.50-0.80	0.040	0.040	0.10-0.35	-	0.250-0.35	441-540	284MIN	21	
DIN/17175/13CrMo44		0.10-0.18	0.40-0.60	0.040	0.040	0.15-0.35	0.70-1.60	0.40-0.50	441-570	294MIN	22	
DIN/17175/10CrM910		0.15MAX	0.40-0.60	0.040	0.040	0.15-0.50	2.0-2.5	0.9-1.10	441-570	249MIN	22	
ASTM A199/T5	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	4.00-6.00	0.45-0.65	415MIN	170MIN	30/22	
ASTM A199/T11	MW	0.05-0.15	0.30-0.60	0.025	0.025	0.50-1.00	1.00-1.50	0.44-0.65	415MIN	170MIN	30/22	
ASTM A199/T22	MW	0.05-0.15	0.30-0.60	0.025	0.025	0.50MAX	1.90-2.60	0.87-1.13	415MIN	170MIN	30/22	
ASTM A199/T4	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	2.15-2.85	0.44-0.65	415MIN	170MIN	30/22	
ASTM A199/T7	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	6.00-8.00	0.45-0.65	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX
ASTM A199/T5	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50MAX	4.00-6.00	0.45-0.65	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX
ASTM A199/T11	MW	0.05-0.15	0.30-0.60	0.025	0.025	0.50-1.00	1.00-1.50	0.44-0.65	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX
ASTMA199/T22	MW	0.05-0.15	0.30-0.60	0.025	0.025	0.50MAX	1.90-2.60	0.87-1.13	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX
ASTM A199/T4	MW	0.05-0.15	0.30-0.60	0.025	0.025	0.50-1.00	2.15-2.852	0.44-0.85	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX
ASTM A199/T7	MW	0.15MAX	0.30-0.60	0.025	0.025	0.50-1.00	6.00-8.00	0.45-0.65	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX
ASTM A199/T9	MW	0.15MAX	0.30-0.60	0.025	0.025	0.25-1.00	8.00-10.00	0.90-1.10	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX
ASTM A199/T9	MW	0.15MAX	0.30-0.60	0.025	0.025	0.25-1.00	8.00-10.00	0.90-1.10	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX
ASTM A199/T9	MW	0.15MAX	0.30-0.60	0.025	0.025	0.25-1.00	8.00-10.00	0.90-1.10	415MIN	170MIN	30/22	HARDNESS 85 HRB MAX
ASTM A335/P9	MW	0.15MAX	0.30-0.60	0.025	0.025	0.25-1.00	8.00-10.00	0.09-1.10	415MIN	172MIN	30/22	HARDNESS 85 HRB MAX
ASTM A178A	MW	0.06-0.18	0.30-0.60	0.035	0.035	-	-		325MIN	180MIN	35	HARDNESS 89 HRB MAX
ASTM A178C	MW	0.35 MAX	0.27-0.63	0.035	0.035	-	-		415MIN	170MIN	30	HARDNESS 89 HRB MAX
ASTM A178B	MW	0.27MAX	0.80 MAX	0.030	0.015	0.10MIN	-		485MIN	275MIN	30	HARDNESS 89 HRB MAX

AYESTA STEELS & ALLOYS

Manufacturing

Butt Weld Pipe Fittings & Flanges

This is to introduce ourselves as the most reliable outsourcing partners for manufacturing of buttwelding pipe fittings, socket weld, pipe fittings, flanges & tubular components in all kinds of steel. Our panel of experienced manufacturers ensures excellent quality fittings meeting exacting standards of National & International quality.

These Pipe Fitting are manufactured from ferrous metals such as Carbon Steel, Alloy Steel, Low Temperature Carbon Steel & Stainless Steel. Both Seamless and E.R.W. Pipe Fittings are Produced by our special manufacturing process involving either hot or cold forming. We are fully capable of manufacturing Pipe fittings made to customer's specifications in terms of type, dimensions, material & quantity under any third party inspection.

These Pipe Fittings are perfectly round, rugged, leak proof, corrosion resistant (Where ever required), meeting all the requirements to ASA/BS/DIN/ISI codes. These quality fittings extend the life of piping systems, facilitate direct pipe welding, permit compact installations & reduce the space necessary for installing a piping network.

FACILITIES

- Hydraulic Press
- Oil Fired Furnace with Temp. Recorder
- Universal Testing Machine
- Hardness Tester
- Chemical laboratory
- Hacksaw cutting Machines
- Lathe Machines
- Plate Rolling Machines
- Grinding Machines
- Drilling Machines
- Motor Generator Welding Sets (Advani)
- AC Welding Sets (Advani)
- DC Rectifier Welding Sets (Advani)
- Computer & Software

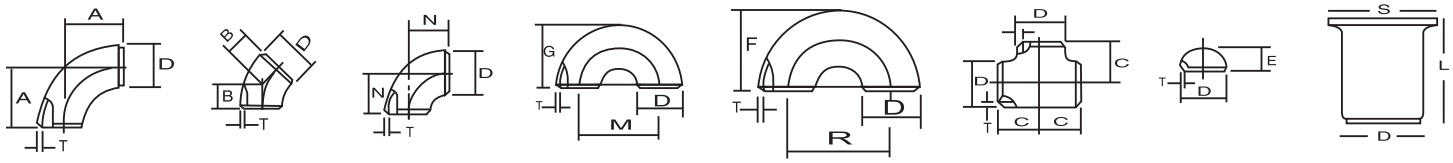
Material Specification For Seamless/Welded Butt-Welding Pipe-Fittings.

SPECIFICATION (ASTM-2002)	CHEMICAL PROPERTIES								MECHANICAL PROPERTIES					OTHERS
	C%	Mn%	P% (Max)	S% (Max)	Si%	Cr%	Mo%	Ni%	U.T.S. (Min) Mpa	Y.S. (Min) Mpa	ELONG. (Min) L	ELONG. (Min) T	Hardness (Max) BHN	
STAINLESS STEEL														
A 403 Gr. WP 304	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	-	8.0-11.0	515	205	28	20	-	
A 403 Gr. WP 304L	0.030 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	-	8.0-12.0	485	170	28	20	-	
A 403 Gr. WP 304H	0.04-0.10	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	-	8.0-11.0	515	205	28	20	-	
A 403 Gr. WP 304LN	0.030 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	-	8.0-11.0	515	205	28	20	-	N%=0.10-0.16
A 403 Gr. WP 309	0.20 Max	2.00 Max	0.045	0.030	1.00 Max	22.0-24.0	-	12.0-15.0	515	205	28	20	-	
A 403 Gr. WP 310S	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	24.0-26.0	-	19.0-22.0	515	205	28	20	-	
A 403 Gr. WP 316	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	2.0-3.0	10.0-14.0	515	205	28	20	-	
A 403 Gr. WP 316L	0.030 Max	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	2.0-3.0	10.0-14.0	485	170	28	20	-	
A 403 Gr. WP 316H	0.04-0.10	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	2.0-3.0	10.0-14.0	515	205	28	20	-	
A 403 Gr. WP 316LN	0.030 Max	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	2.0-3.0	10.0-13.0	515	205	28	20	-	N%=0.10-0.16
A 403 Gr. WP 317	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	3.0-4.0	11.0-15.0	515	205	28	20	-	
A 403 Gr. WP 317L	0.030 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	3.0-4.0	11.0-15.0	515	205	28	20	-	
A 403 Gr. WP 321	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	-	9.0-12.0	515	205	28	20	-	Ti%=(5XC)-0.70
A 403 Gr. WP 321H	0.04-0.10	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	-	9.0-12.0	515	205	28	20	-	Ti%=(4XC)-0.70
A 403 Gr. WP 347	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	-	9.0-12.0	515	205	28	20	-	Cb%=(10XC)-1.10
A 403 Gr. WP 347H	0.04-0.10	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	-	9.0-12.0	515	205	28	20	-	Cb%=(8XC)-1.10
CARBON STEEL														
A 234 Gr. WPB	0.30 Max	0.29-1.06	0.050	0.058	0.10 Min	0.40 Max	0.15 Max	0.40 Max	415-655	240	30	20	197	Cu%=0.40 Max, Va%=0.08 Max, Cb%=0.02 Max
A 234 Gr. WPC	0.35 Max	0.29-1.06	0.050	0.058	0.10 Min	0.40 Max	0.15 Max	0.40 Max	485-655	275	30	20	197	Cu%=0.40 Max, Va%=0.08 Max, Cb%=0.02 Max
LOW TEMPERATURE CARBON STEEL														
A 420 Gr. WPL6	0.30 Max	0.50-1.35	0.035	0.040	0.15-0.40	0.30 Max	0.12 Max	0.40 Max	415-655	240	30	16.5	197	Cu%=0.40 Max, Va%=0.08 Max, Cb%=0.02 Max **Impact Test**=-45°C, J=17.3-13-6
A 420 Gr. WPL 3	0.20 Max	0.31-0.64	0.050	0.050	0.13-0.37	-	-	3.20-3.80	450-620	240	30	20	197	**Impact Test**=-45°C, J=17.3-13-6
ALLOY STEEL														
A 234 Gr. WP 1	0.28 Max	0.30-0.90	0.045	0.045	0.10-0.50	-	0.44-0.65	-	380-550	205	30	20	197	
A 234 Gr. WP 5	0.15 Max	0.30-0.60	0.040	0.030	0.50 Max	4.0-6.0	0.44-0.65	-	415-585	205	30	20	217	
A 234 Gr. WP 9	0.15 Max	0.30-0.60	0.030	0.030	1.00 Max	8.0-10.0	0.90-1.10	-	415-585	205	30	20	217	
A 234 Gr. WP 11 CL1	0.05-0.15	0.30-0.60	0.030	0.030	0.50-1.0	1.0-1.5	0.44-0.65	-	415-585	205	30	20	197	
A 234 Gr. WP 11 CL2	0.05-0.20	0.30-0.80	0.040	0.040	0.50-1.0	1.0-1.5	0.44-0.65	-	485-655	275	30	20	197	
A 234 Gr. WP 11 CL3	0.05-0.20	0.30-0.80	0.040	0.040	0.50-1.0	1.0-1.5	0.44-0.65	-	520-690	310	30	20	197	
A 234 Gr. WP 12 CL1	0.05-0.20	0.30-0.80	0.045	0.045	0.60 Max	0.80-1.25	0.44-0.65	-	415-585	220	30	20	197	
A 234 Gr. WP 12 CL2	0.05-0.20	0.30-0.80	0.045	0.045	0.60 Max	0.80-1.25	0.44-0.65	-	485-655	275	30	20	197	
A 234 Gr. WP 22 CL1	0.05-0.15	0.30-0.60	0.040	0.040	0.50 Max	1.90-2.60	0.87-1.13	-	415-585	205	30	20	197	
A 234 Gr. WP 22 CL3	0.05-0.15	0.30-0.60	0.040	0.040	0.50 Max	1.90-2.60	0.87-1.13	-	520-690	310	30	20	197	
A 234 Gr. WP 91	0.08-0.12	0.30-0.60	0.020	0.010	0.20-0.50	8.0-9.5	0.85-1.05	0.40 Max	585-760	415	20	-	248	Va%=0.18-0.25, Cb%=0.06-0.10, N%=0.03-0.07, Al%=0.04 Max

AYESTA STEELS & ALLOYS

AYESTA STEELS & ALLOYS

BUTT WELDING PIPE FITTING DIMENSIONAL STANDARD
ANSI B-16.9 /16.28 / MSS SP-43

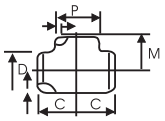


90° Elbow long radius | 45° Elbow | 90° Elbow short radius | 180° Return Bend short radius | 180° Return Bend long radius | Tee equal | Caps | Stub-End

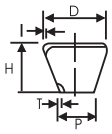
Nominal Pipe Size		Outside Diameter	Center to Face				Back to Face			Center to Center			Length 'L'	
Inch.	mm	D	A	B	C	N	E	F	G	R	M	S	MSS SP43	ANSI B 16.9
1/2	15	21.3	38	16	25	_	25	48	_	76	_	34.9	50.8	76.2
3/4	20	26.7	29	11	29	_	25	43	_	57	_	42.8	50.8	76.2
1	25	33.4	38	22	38	25	38	56	41	76	51	50.8	50.8	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	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	152.4	305.0
18	450	457.2	686	286	343	457	203	914	686	1372	914	533.4	152.4	305.0
20	500	508.0	762	318	381	508	229	1016	762	1524	1016	584.2	152.4	305.0
22	550	559.0	838	343	419	559	254	1118	838	1676	1118	614.4	152.4	305.0
24	600	610.0	914	381	432	610	267	1219	914	1829	1219	692.2	152.4	305.0
26	650	660.0	991	406	495	660	267							
28	700	711.0	1067	438	521	711	267							
30	750	762.0	1143	470	559	762	267							
32	800	813.0	1219	502	597	813	267							
34	850	864.0	1295	533	635	864	267							
36	900	914.0	1372	565	673	914	267							
38	950	965.0	1448	600	711	965	305							
40	1000	1016.0	1524	632	749	1016	305							
42	1050	1067.0	1600	660	762	1067	305							
44	1100	1118.0	1676	695	813	1118	343							
46	1150	1168.0	1753	727	851	1168	343							
48	1200	1219.0	1829	759	889	1219	343							

AYESTA STEELS & ALLOYS

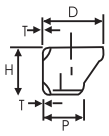
DIMENSIONS OF BUTT-WELDING FITTING ANSI B-16.9 / B-16.28



REDUCING TEES



CONCENTRIC REDUCERS



ECCENTRIC REDUCERS

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

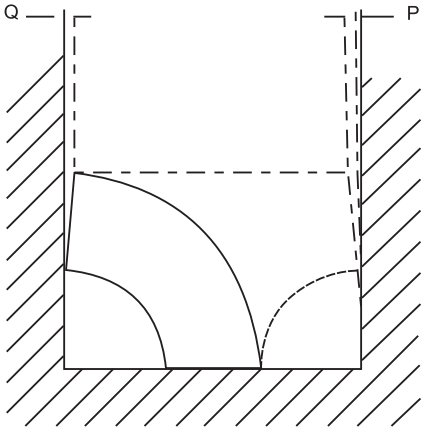
Nominal Pipe Size		Outside Diameter		Center to End		Length
Inch.	mm	D	P	C	M	H
8 x 6	200x150	219.1	168.3	178	168	152
8 x 5	200 x 125	219.1	141.3	178	162	152
8 x 4	200 x 100	219.1	114.3	178	156	152
8 x 31/2	200 x 90	219.1	101.6	178	152	152
10 x 8	250 x 200	273.1	219.1	216	203	178
10 x 6	250 x 150	273.1	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	-

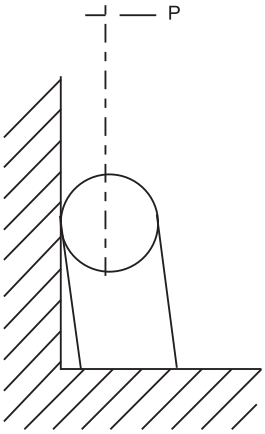
AYESTA STEELS & ALLOYS

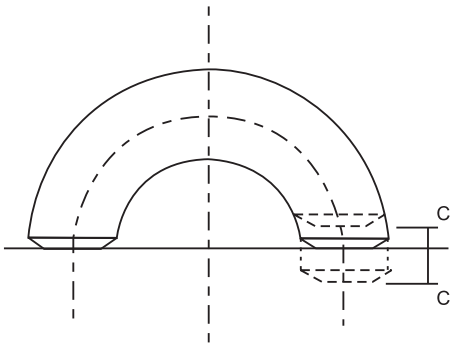
DIMENSIONAL TOLERANCES AS PER ANSI B 16.9/ 16.28 & MSS-SP 43
BUTT WELD PIPE FITTINGS

ALL FITTINGS				90° / 45° ELBOWS & TEES	Reducers and 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	Overall Length	Overall Length	Center to Center Dimensions	Back to Face Dimension	Alignment of Ends	Fillet**Radius of Lap	O. D of Lap	Thk of Laps
15-65	+1.59 -0.80	±0.80	Not Less Than 87½% of Nominal Thickness	±1.59	±1.59	±3.17	±6.35	±6.35	±0.80	+0 -0.79	+0 -0.79	+1.59 -0
80-90	±1.59	±1.59		±1.59	±1.59	±3.17	±6.35	±6.35	±0.80	+0 -0.79	+0 -0.79	+1.59 -0
100	±1.59	±1.59		±1.59	±1.59	±3.17	±6.35	±6.35	±0.80	+0 -1.59	+0 -0.79	+1.59 -0
125-200	+2.38 -1.59	±1.59		±1.59	±1.59	±6.35	±6.35	±6.35	±0.80	+0 -1.59	+0 -0.79	+1.59 -0
250-450	+3.97 -3.17	±3.17		±2.38	±2.38	±6.35	±9.53	±6.35	±1.59	+0 -1.59	+0 -1.59	+1.59 -0
500-600	+6.35 -4.76	±4.76		±2.38	±2.38	±6.35	±9.53	±6.35	±1.59	+0 -1.59	+0 -1.59	+1.59 -0
650-750	+6.35 -4.76	±4.76		±3.17	±4.76	±9.53						
800-1200	+6.35 -4.76	±4.76		±4.76	±4.76	±9.53						

Nominal Pipe Size	Angularity Tol.	
	Off Angle Q	Off Plane P
15-100	0.80	1.59
125-200 250-300 350-450	1.5 2.38 2.38	3.17 4.76 6.35
450-600 650-750	3.17 4.76	9.53 9.53
800-1050	4.76	12.70
100-1200	4.76	19.05

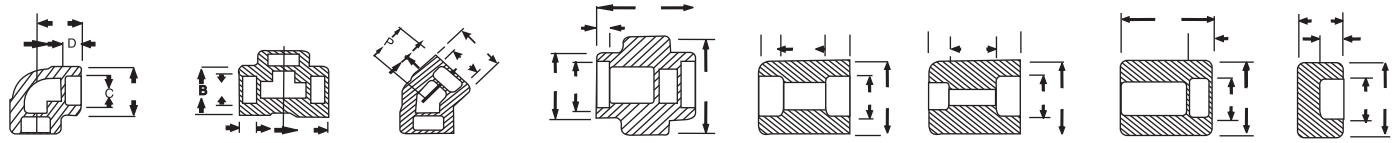






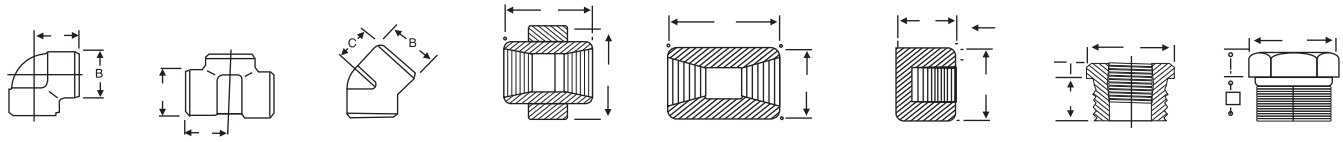
AYESTA STEELS & ALLOYS

SOCKET WELD FITTING TO ANSI B-16.11



NOM	PIPE	3000 LBS.									COMMON FACTORS				6000 LBS.				
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	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	43	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	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	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

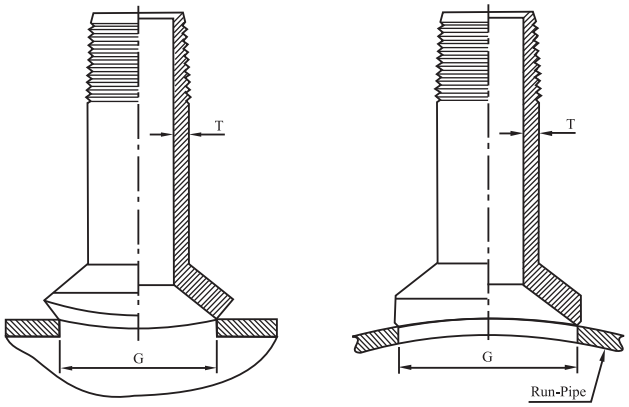
AYESTA STEELS & ALLOYS

FORGED STEEL OUTLET FITTINGS NIPPOLETS

3000#

(in millimeters)

Run-Pipe Size	Outlet Size	Wall-T	G	Unit Weight (kg)
36-3/4	1/2	7.3	23.9	0.36
36-1	3/4	7.9	30.2	0.56
36-1¼	1	8.9	36.6	0.84
36-1½	1 1/4	9.7	44.5	1.22
36-2	1 1/2	10.2	50.8	2.00
36-2½	2	11.2	65.0	3.12

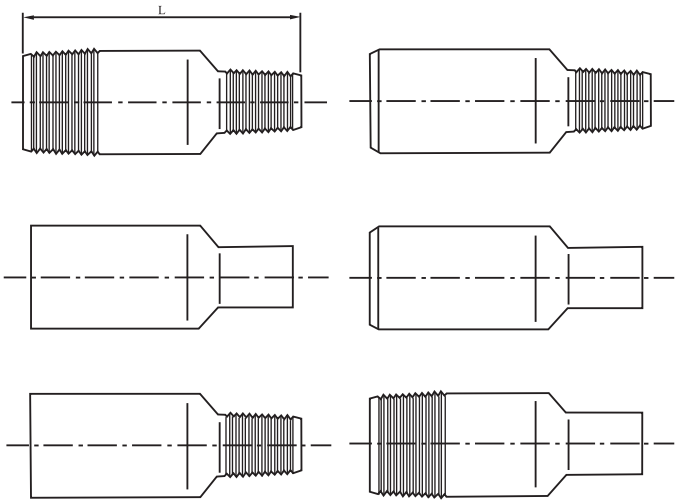


MSS SP- 97

SWAGED NIPPOLETS

(in millimeters)

Large end Size	Small and Size	Length-L
1/2	3/8-1/8	70
3/4	1/2-1/8	76
1	3/4-1/8	89
1¼	1-1/8	102
1½	1 1/4-1/8	114
2	1 1/2-1/8	165
2½	2-1/8	178
3	2 1/2-1/8	203
3½	3-1/8	203
4	3 1/2-1/8	229



MSS SP- 95

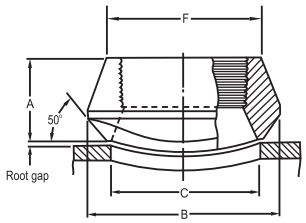
TBE Threaded both end
PBE Plain both end
PLE/TSE Plain large end-Threaded small end
BLE/TSE Beveled large end - Threaded small end
BLE/PSE Beveled large end - Plain small end
TLE/PSE Threaded large end-Plain small end

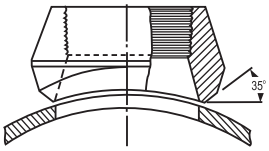
AYESTA STEELS & ALLOYS

SWAGED NIPPOLETS

FORGED STEEL OUTLET FITTINGS SOCKOLETS

3000#, 6000#



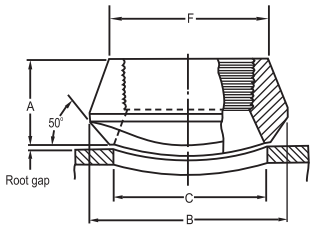


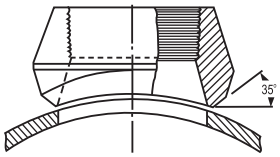
Outlet Size	A		B		C	
	3000#	6000#	3000#	6000#	3000#	6000#
1/2	25.4	31.8	34.9	44.5	23.8	19.1
3/4	27.0	36.5	44.5	50.8	30.2	25.4
1	33.3	39.7	54.0	61.9	36.5	33.3
1¼	33.3	41.3	65.1	69.9	44.5	38.1
1½	34.9	42.9	73.0	82.6	50.8	49.2
2	38.1	52.4	88.9	103.2	65.1	69.9
2½	46.0	-	103.2	-	76.2	-
3	50.8	-	122.2	-	93.7	-
4	57.2	-	152.4	-	120.7	-

Applicable Run Pipe Sizes are From out-Let to 36"
For the 3000# and 6000# Sockolets and Thredolets, Inside Bore, Thread, Socket Bore and Socket depth Dimensions are According to ANSI B16.11
Pipe Schedule Numbers and Weight Designation are in Accordance With ANSI B36.10
When Ordering Sockolets and Thredolets, Include The Quantity, Run and Out-Let Size, Item And Rating(or Schedule Number)and Material

FORGED STEEL OUTLET FITTINGS THREADOLETS

3000#, 6000#





Outlet Size	A		B		C	
	3000#	6000#	3000#	6000#	3000#	6000#
1/2	25.4	31.8	34.9	44.5	23.8	19.1
3/4	27.0	36.5	44.5	50.8	30.2	25.4
1	33.3	39.7	54.0	61.9	36.5	33.3
1¼	33.3	41.3	65.1	69.9	44.5	38.1
1½	34.9	42.9	73.0	82.6	50.8	49.2
2	38.1	52.4	88.9	103.2	65.1	69.9
2½	46.0	-	103.2	-	76.2	-
3	50.8	-	122.2	-	93.7	-
4	57.2	-	152.4	-	120.7	-

Applicable Run Pipe Sizes are From out-Let to 36"
For the 3000# and 6000# Sockolets and Threadolets, Inside Bore, Thread, Socket Bore and Socket depth Dimensions are According to ANSI B16.11
Pipe Schedule Numbers and Weight Designation are in Accordance with ANSI B36.10
When Ordering Sockolets and Threadolets, include the Quantity, Run and Out-Let Size, Item and Rating(or Schedule Number)and Material

Material Specification For Forged Fittings & Flanges

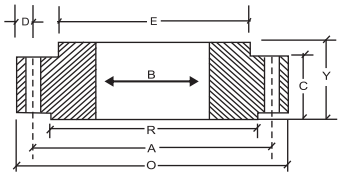
SPECIFICATION (ASTM-2002)	CHEMICAL PROPERTIES								MECHANICAL PROPERTIES					OTHERS
	C%	Mn%	P% (Max)	S% (Max)	Si%	Cr%	Ni%	Mo%	U.T.S. (Min) Mpa	Y.S. (Min) Mpa	ELONG. (Min) %	RED. AREA %	Hardness (Max) BHN	
STAINLESS STEEL														
A 182 Gr. F 304	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	8.0-11.0	-	515	205	30	50	-	-
A 182 Gr. F 304L	0.030 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	8.0-13.0	-	485	170	30	50	-	-
A 182 Gr. F 304H	0.04-0.10	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	8.0-11.0	-	515	205	30	50	-	-
A 182 Gr. F 304LN	0.030 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	8.0-10.5	-	515	205	30	50	-	N%=0.10-0.16
A 182 Gr. F 309H	0.04-0.10	2.00 Max	0.045	0.030	1.00 Max	22.0-24.0	12.0-15.0	-	515	205	30	50	-	-
A 182 Gr. F 310	0.25 Max	2.00 Max	0.045	0.030	1.00 Max	24.0-26.0	19.0-22.0	-	515	205	30	50	-	-
A 182 Gr. F 316	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	10.0-14.0	2.0-3.0	515	205	30	50	-	-
A 182 Gr. F 316L	0.030 Max	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	10.0-15.0	2.0-3.0	485	170	30	50	-	-
A 182 Gr. F 316H	0.04-0.10	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	10.0-14.0	2.0-3.0	515	205	30	50	-	-
A 182 Gr. F 316LN	0.030 Max	2.00 Max	0.045	0.030	1.00 Max	16.0-18.0	11.0-14.0	2.0-3.0	515	205	30	50	-	N%=0.10-0.16
A 182 Gr. F 317	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	11.0-15.0	3.0-4.0	515	205	30	50	-	-
A 182 Gr. F 317L	0.030 Max	2.00 Max	0.045	0.030	1.00 Max	18.0-20.0	11.0-15.0	3.0-4.0	485	170	30	50	-	-
A 182 Gr. F 321	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	9.0-12.0	-	515	205	30	50	-	Ti%=(5xC)-0.70
A 182 Gr. F 321H	0.04-0.10	2.00 Max	0.045	0.030	1.00 Max	17.0-19.0	9.0-12.0	-	515	205	30	50	-	Ti%=(4xC)-0.70
A 182 Gr. F 347	0.080 Max	2.00 Max	0.045	0.030	1.00 Max	17.0-20.0	9.0-13.0	-	515	205	30	50	-	Cb%=(10xC)-1.10
A 182 Gr. F 347H	0.04-0.10	2.00 Max	0.045	0.030	1.00 Max	17.0-20.0	9.0-13.0	-	515	205	30	50	-	Cb%=(8xC)-1.10
CARBON STEEL														
A 105	0.35 Max	0.60-1.05	0.035	0.040	0.10-0.35	0.30 Max	0.40 Max	0.12 Max	485	250	22	30	187	Cu%=0.40 Max, Va %= 0.08 Max
LOW TEMPERATURE CARBON STEEL														
A 350 Gr. LF 1	0.30 Max	0.60-1.35	0.035	0.040	0.15-0.30	0.30 Max	0.40 Max	0.12 Max	415-585	205	25	38	197	Cu%=0.40Max, Cb%=0.02 Max, Va %= 0.05 Max, Impact Test =-28.9°C, J=18 Min
A 350 Gr. LF 2	0.30 Max	0.60-1.35	0.035	0.040	0.15-0.30	0.30 Max	0.40 Max	0.12 Max	485-655	250	22	30	197	Cu%=0.40Max, Cb%=0.02 Max, Va %= 0.05 Max, Impact Test =-45.6°C, J=18 Min
A 350 Gr. LF 3	0.20 Max	0.90 Max	0.035	0.040	0.20-0.35	0.30 Max	3.30-3.70	0.12 Max	485-655	260	22	35	197	Cu%=0.40Max, Cb%=0.02 Max, Va %= 0.03 Max, Impact Test =-101°C, J=20 Min
ALLOY STEEL														
A 182 Gr. F 1	0.28 max	0.60-0.90	0.045	0.045	0.15-0.35	-	-	0.44-0.65	485	275	20	30	143-192	-
A 182 Gr. F 2	0.05-0.21	0.30-080	0.040	0.040	0.10-0.60	0.50-0.81	-	0.44-.65	485	275	20	30	143-192	-
A 182 Gr. F 5	0.15 max	0.30-0.60	0.030	0.030	0.50 Max	4.0-6.0	0.5 Max	0.44-0.65	485	275	20	35	143-217	-
A 182 Gr. F 9	0.15 max	0.30-0.60	0.030	0.030	0.50-1.00	8.0-10.0	-	0.90-1.10	585	380	20	40	179-217	-
A 182 Gr. F 11 CL1	0.05-0.15	0.30-0.60	0.030	0.030	0.50-1.00	1.0-1.50	-	0.44-0.65	415	205	20	45	121-174	-
A 182 Gr. F 11 CL2	0.10-0.20	0.30-0.80	0.040	0.040	0.50-1.0	1.0-1.50	-	0.40-0.65	485	275	20	30	143-207	-
A 182 Gr. F 11 CL3	0.10-0.20	0.30-0.80	0.040	0.040	0.50-1.0	1.0-1.50	-	0.44-0.65	515	310	20	30	156-207	-
A 182 Gr. F 12 CL1	0.05-0.15	0.30-0.60	0.045	0.045	0.50 Max	0.80-1.25	-	0.44-0.65	415	220	20	45	121-174	-
A 182 Gr. F 12 CL2	0.10-0.20	0.30-0.80	0.040	0.040	0.10-0.60	0.80-1.25	-	0.44-0.65	485	275	20	30	143-207	-
A 182 Gr. F 22 CL1	0.05-0.15	0.30-0.60	0.040	0.040	0.50 Max	2.0-2.5	-	0.87-1.13	415	205	20	35	170	-
A 182 Gr. F 22 CL3	0.05-0.15	0.30-0.60	0.040	0.040	0.50 Max	2.0-2.50	-	0.87-1.13	515	310	20	30	156-207	Cb%=0.06-0.10, N%=0.03-0.07, Va %= 0.18-0.25
A 182 Gr. F 91	0.08-0.12	0.30-0.60	0.020	0.010	0.20-0.50	8.0-9.5	0.40 Max	0.85-1.05	585	415	20	40	248	

AYESTA STEELS & ALLOYS

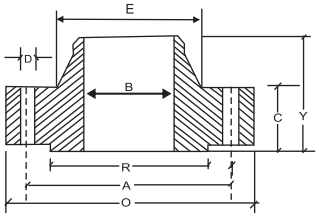
AYESTA STEELS & ALLOYS

FORGED FLANGES DIMENSIONS

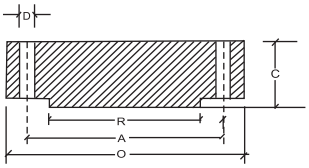
Dimensions Of Forged Flanges ANSI B 16.5



SLIP-ON FLANGE



WELDING NECK FLANGE



BLIND FLANGE

ASA 150 CLASS

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).

ASA 300 CLASS

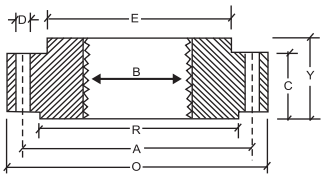
Nominal Pipe Size		Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Lenght through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
								S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	(INCH.)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	1/2	95.2	66.7	15.9	4	14.3	38.1	22.2	52.4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

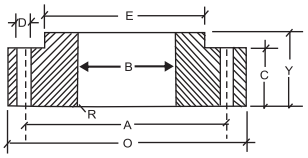
AYESTA STEELS & ALLOYS

FORGED FLANGES DIMENSIONS

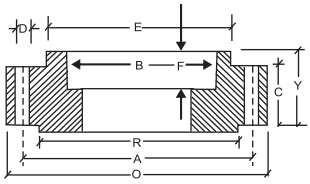
Dimensions Of Forged Flanges ANSI B 16.5



THREADED FLANGES



LAP JOINT FLANGES



SOCKET WELD FLANGES

ASA 600 CLASS

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).

ASA 900 CLASS

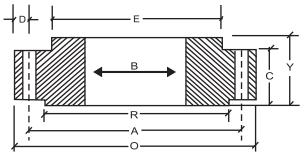
Nominal Pipe Size	Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Lenght through Hub			Dia of Bore		Dia of R/F	Depth of Socket	Pipe Dia
							S/O & S/W	W/N	L/J	S/O & S/W	L/J			
(MM)	O	A	D		C	E	Y	Y	Y	B	B	R	F	X
15	120.6	82.5	22.2	4	22.2	38.1	31.7	60.3	31.7	22.3	22.8	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 Lenght through Hub(Y).

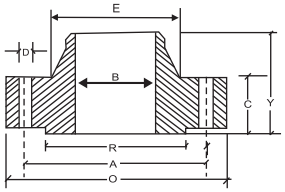
AYESTA STEELS & ALLOYS

FORGED FLANGES DIMENSIONS

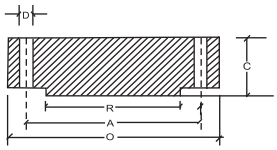
Dimensions Of Forged Flanges ANSI B 16.5



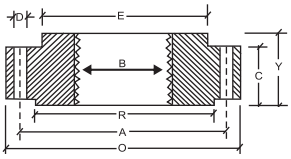
SLIP-ON FLANGE



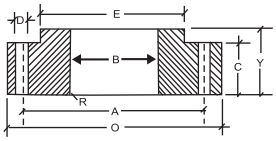
WELDING NECK FLANGE



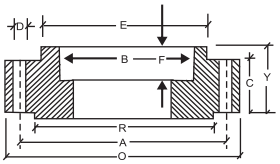
BLIND FLANGE



THREADED FLANGES



LAP JOINT FLANGES



SOCKET WELD FLANGES

ASA 1500 CLASS

Nominal Pipe Size		Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Length 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
For Dimensions from 1/2" to 2 1/2" kindly refer ASA 900 LBS Table.															
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).

ASA 2500 CLASS

Nominal Pipe Size		Flange Dia	Dia of Bolt Circle	Dia of Bolt Holes	No. of Holes	Thk of Flange	Dia of Hub	Length 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 ● Flanges except Lap Joint will be furnished with(6.35mm) Raised Face, which is not included in Thickness(C) and Lenght through Hub(Y).

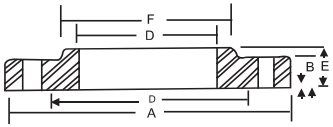
AYESTA STEELS & ALLOYS

ANSI FLANGES WEIGHTS (KGS)

N. B.	150 lbs		300 lbs		600 lbs		900 lbs	
Size	WN	SO	WN	SO	WN	SO	WIN	SO
1/2”	0.7	0.4	0.8	0.7	0.9	0.8	1.9	1.8
3/4”	0.9	0.7	1.4	1.2	1.6	1.4	2.7	2.5
1”	1.1	0.8	1.7	1.4	1.9	1.7	3.9	3.6
1 1/4”	1.5	1.2	2.2	1.8	2.6	2.1	4.5	4.1
1 1/2”	1.8	1.4	3.2	2.7	3.5	3.1	6.2	5.6
2”	2.7	2.2	3.6	3.2	4.7	3.8	11.3	10.3
2 1/2”	4.4	3.5	5.5	4.5	6.7	5.5	15.5	14.3
3”	5.1	4.1	7.3	6.1	8.7	7.3	15	12.3
3 1/2”	6.4	5.2	9	7.5	11.2	8.9	--	--
4”	7.5	5.6	11.9	10	18.3	15.8	24	20.5
5”	9	6.3	16	12.5	30.5	25	37.5	33.5
6”	11	7.8	20	16.2	37	29.5	50	43
8”	18.5	12.6	31	25	55	44	85	74
10”	25	18	44.3	35	91	71	125	105
12”	38	27.5	64	50	108	85	165	136
14”	51	37	88	72	150	96	198	158
16”	63	46	112	90	180	145	224	184
18”	71	50	138	115	240	175	320	258
20”	88	64	171	137	295	220	375	316
24”	120	90	240	210	363	315	680	608

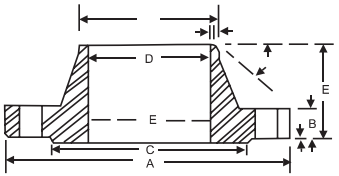
DIMENSIONAL TOLERANCES FOR FORGED STEEL FLANGES

Threaded, lap joint, slip-on and Blind Flanges ANSI B 16.5



Outside Diameter (A)	When O.D. is 24" or less	±1/16**	Outside Dia. of Hub (F)	12" and smaller	+3/32"*-1/16**
	When 0. D is over 24"	± 1/8**		Over 12"	± 1/8**
Inside Diameter (D)	Threaded	Within limits on Boring gauge	Drilling	Bolt Circle	± 1/16*
				Bolt hole spacing	±1/32*
	Slip on and Lap Joint	10" and smaller + 1/32", -0" 12" and larger + 1/16"-0"		Eccentricity between 2 ½" and smaller bolt circle diameter and machined facing Diameter	1/32" Max. 3" and larger 1/16" Max.
Diameter of Contact **Face** (C)	1/16 Raised Face	±1/32"	Overall Height (E)	On flanges 18" and smaller	+1/8"*-1/32"*
				On flanges larger than 13"	+3/15"*-1/16"*
	1/4 Raised Face, Tongue and Groove of male and Female	± 1/64"	Thickness (E)	13" and smaller	41/8"-0"
				Over 18"	+ 3/16"-0"
Diameter of Counter bore	Same as for inside diameter			Where allowance has been left On face for finish: All sizes + 1/8"*-1/16"*	

Welding neck flanges ANSI B 16.5



This tolerance not covered by ANSI B 16.5

Outside Diameter (A)	When O. D. is 24: or less	± 1/16"*	**Drilling**	Bolt Circle	± 1/16"
	When O. D. is over 24"	± 1/8"*		Bolt hole spacing	± 1/32"
smaller inside Diameter (D)	10" and smaller	± 1/32"		Eccentricity between ½" and smaller2½" and bolt circle diameter and machined facing diameter	1/32" max 3" and larger 1/16" max
	12" to 18"	± 1/16			
	Over 18"	+ 1/8-1/16"	Width of Land	All sizes	± 1/32"
Diameter of Contact **Face** (C)	1/16" Raised Face	± 1/32"	Angle of Hub Bevel	All Sizes 18" and smaller	± 2½" ± 1/16
	1/4" Raised face, Tongue and Groove, or Male and Female	± 1/64"			
Diameter of Hub at Point of Welding (G)	5" and smaller	+3/32"-1/32"	Overall Height (E)	12" and larger ±	± 1/8"
				10" and smaller	+ 1/8"-0"
	5" and larger	+5/32"-1/32	Thickness (E)	Over 18"	+ 3/16"-0"
Diameter of Hub at Base (F)	When "F" is 24" and smaller	± 1/8"*		Where allowance has been left **on face**for Finish, All size	+1/8"*-1/16"*
	When "F" is over 24"	**± 1/8**			

AYESTA STEELS & ALLOYS

Alloy 20

Titanium Gr.2

Alloy 800

S31703/1.4438

32750/F53

31803/F51

Hast.C22

Nitronic 60

Alloy 718

Alloy 36

Hast.C276

316S11/1.4404

Alloy 42

Alloy 625

Inconel 825

S32100/1.4541

Alloy 400

Alloy K500

Alloy 600

316T.I./I.4571

Nitronic 50

Ni-Resist

32760/F55

Titanium Gr.5

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