

MBM TUBES PVT. LTD.

AN ISO 9001, ISO 14001, OHSAS 18001, PED 2014/68/EU,
AD 2000 MERKBLATT WO CERTIFIED COMPANY



**MANUFACTURER & EXPORTERS OF
STAINLESS STEEL SEAMLESS & WELDED PIPES, TUBES,
'U' TUBES & CORRUGATED TUBES**



MBM TUBES PVT LTD is engaged in manufacturing of Seamless & Welded Pipes, Tubes, U tubes & Corrugated Tubes. Outfitting the requirements of many large and medium scale industries from all over the globe. It has dedicated workforce of over 150 employees including highly Qualified & experienced Engineers, Supervisors and Workers and has "State of the Art" manufacturing facilities capable of meeting any stringent parameters and in-house modern testing equipments to ensure supply of top quality Seamless & Welded Pipes, Tubes, U tubes & Corrugated Tubes.

With globalization of world economies, the market has marched into an era where brand becomes great emphasize. We compete international market with high quality, insisting on idea of providing global customer satisfaction with superior quality of material. With market developing trend we maximize organizational efficiency and bring the ability of innovation, co ordination and management into full play.

MBM TUBES PVT LTD. are poised to grow beyond Its extent and would stride towards the promising future.

- Positive response to the advanced and diversified needs of customers.
- Introduction of our unique new products to create additional demand for Steel tubes & pipes.

We would recognize that it is equally important for us to accomplish the following actionable improvements

- On day-to-day assignments gradually and steadily.
- Improvement in competition with reasonable cost effectiveness.
- Achievement of a quality upgradation to satisfy customers.
- Improvement in every employee's work environment to accept the challenge; whereby to meet the target.
- We would sincerely seek to have continuous support, guidance, and co-operation of clients.

With its streamlined capabilities, ultra-competitive prices and state-of-the-art supply chain solutions, MBM TUBES PVT LTD is the ideal partner for managing and powering the performance of your business. The company caters to niche market of all the emerging sectors like Heat Exchangers, Sugar, Chemical, Fertilizer, Oil Processing, Textile Machinery, Synthetic Fibers, Refinery & Petrochemicals, Dairy, Power Plants, Pesticides, Pharmaceuticals, Paper & Rayon, and Breweries etc.

Committed to quick responses, unsurpassed quality, competitive pricing, reliable deliveries and an exhaustive inventory, MBM TUBES PVT LTD. aims to be India's leading export house. The organization is dedicated to putting the customers first by developing ideas and supplying products in the closest possible partnership for creating mutual growth.

Our mission is to provide superior customer service and satisfaction so that we are the First Choice of every customer for delivering Steel Tubes, Pipes and services.

Vision

To be Synonymouse of quality with global recognition in Seamless & Welded Pipes, Tubes, U-Tubes & Corrugated Tubes

Mission

- To gradually achieve the sound name in quality products requirements in INDIA & across the globe.
- To create the highest customer value & global presence by providing high quality products & Services at a competitive price with committed on time deliveries
- To innovate & Create core values by developing & sufficing the needs of the niche products in exotic alloys

QUALITY POLICY

- MBM Tubes Pvt. Ltd. are committed to achieve Total Customer Satisfaction through adherence to quality systems, continual improvement in our production system and process through innovation.
- This Commitment is shared by all our employees and is an integral part of the fundamental value system of our company for delivering timely, cost effective and quality products and services.
- " To Provide Quality Products On Time, Every Time "

PILGERING

In Cold Pilgering Process using full link die and taper mandral to reduce the cross section by upto 90%
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 and wall thickness corresponding increase in tube length

OUR PRODUCT RANGE :

Size :-	6 mm OD to 609.6 mm OD
Thickness :-	0.5 mm Thick to 60 mm Thick
Length :-	1 Mtr Upto 24 Mtrs Long / As per Customer's requirement

SPECIFICATION :

ASTM A-213, A-268, A-269, A-270, A-312, EN 10216- 5, EN 10266-5 & Its Equivalent ASME, DIN & EN standard

AUSTENITIC GRADES :

304, 304L, 304H, 316, 316L, 316Ti, 316H, 317, 317L, 321, 321H, 347, 347H, 301, 310S, 310H, 904L & Its Equivalents

FERRITIC & MARTENSITIC GRADES:

405, 409, 409M, 410, 430, 430Ti & Its Equivalents

DUPLEX & SUPER DUPLEX STEEL:

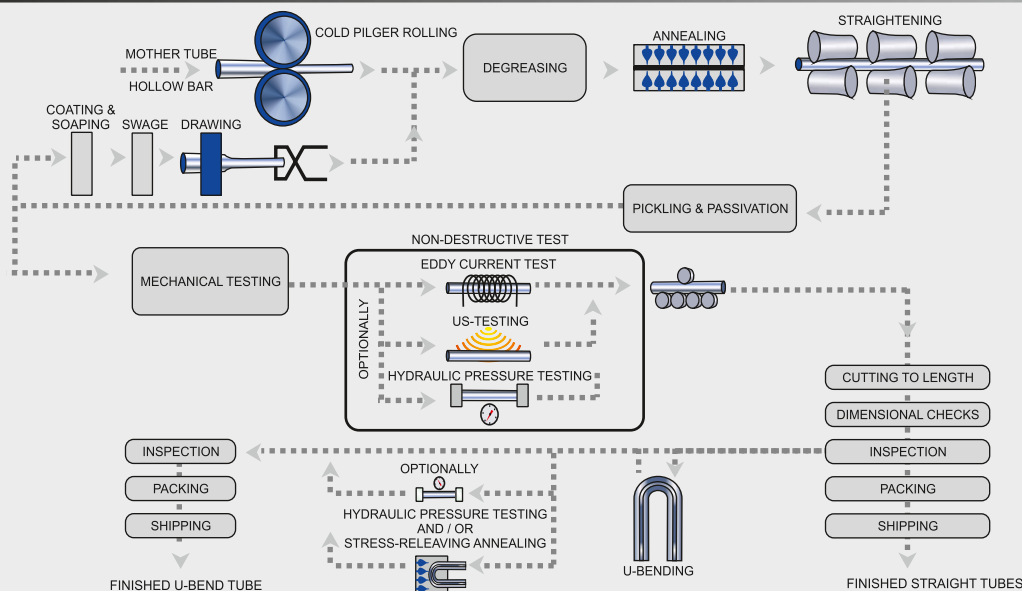
UNS 31803, 32205, 32750, 31500 & Its Equivalents

SURFACE FINISHED:

We can provide Pipes and Tubes with Mechanical Polish with Grits of 80, 120, 240, 320, 400, and 600 grit & Mirror Polished



PROCESS OF SEAMLESS PIPE & TUBE



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 Uncoiler 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 Through A Non Consumable Electrode Without Using Any Filler Metal. 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 :

Size :-	6 mm OD to 609.6 mm OD
Thickness :-	0.5 mm Thick to 60 mm Thick
Length :-	1 Mtr Upto 24 Mtrs Long / As per Customer's requirement

SPECIFICATION :

ASTM A-249, A-268, A-269, A-270, A-312, A-554, A-688, A-778, IS 13316:92, EN 10217-7 & Its Equivalent ASME, DIN & EN standard

AUSTENITIC GRADES :

304, 304L, 304H, 316, 316L, 316Ti, 316H, 317, 317L, 321, 321H, 347, 347H, 301, 310S, 310H, 904L & Its Equivalents

FERRITIC & MARTENSITIC GRADES:

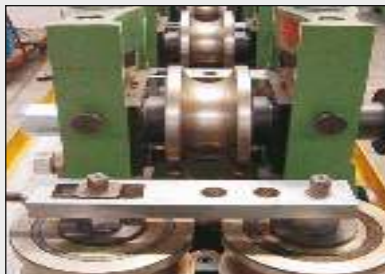
405, 409, 409M, 410, 430, 430Ti & Its Equivalents

DUPLEX & SUPER DUPLEX STEEL:

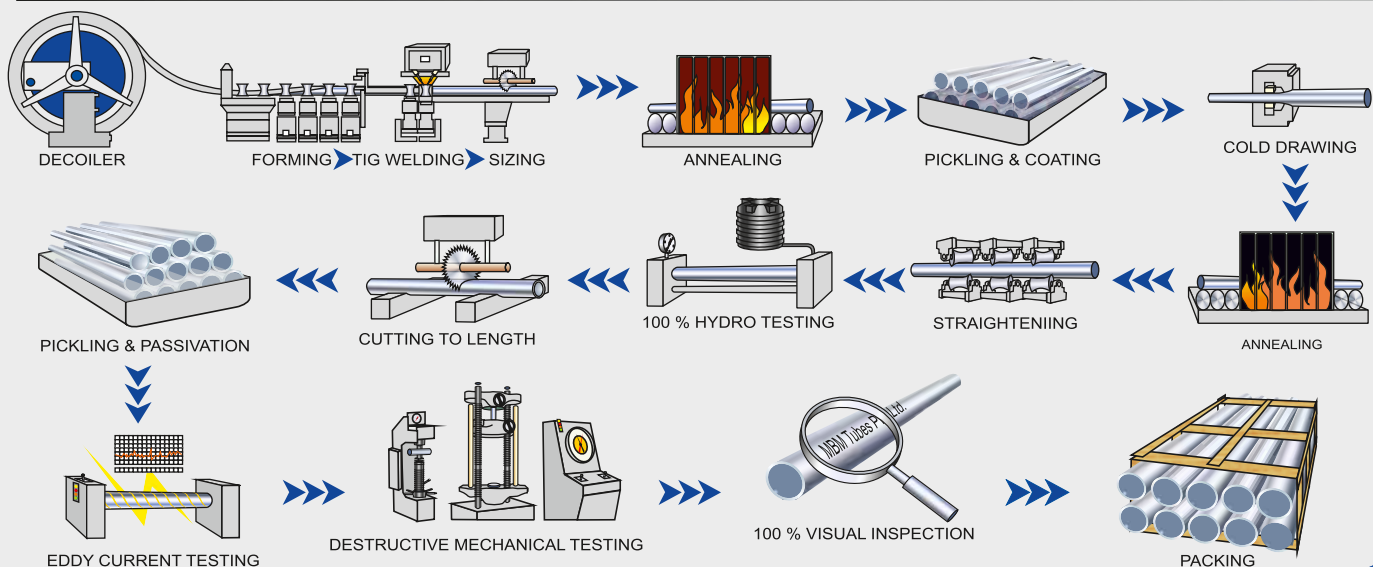
UNS 31803, 32205, 32750, 31500 & Its Equivalents

SURFACE FINISHED:

We can provide Pipes & Tubes with Mechanical Polish with Grits of 80, 120, 240, 320, 400, and 600 grit & Mirror Polished



PROCESS OF WELDED PIPE & TUBE





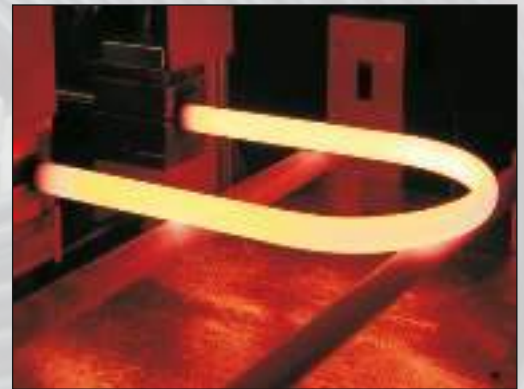
'U' TUBES

Latest Type Of 'U' Bending Machine Is Used For Precision Cold Bending Of Tubes. Specially Prepared Jigs And Fixtures Are Used To Ensure The Dimensional Accuracy For 'U' Bend Tubes. Bending Is Done For All Kind Of Heat Exchanger, Condenser, Economizer, Boiler Tube In Seamless As Well As Welded. Subsequent To 'U' Bend Tubes Are Hydro Tested And Stress Relieved, Also Mockup Pieces Are Prepared For Determining Thickness Reduction On The Bend Portion. Dye Penetrant Testing On Bend Portion Is Done To Detect Cracks, Flaws Or Any Type Of Defects. Special Packaging Is Provided To Prevent Any Damage During Transit.



HEAT TREATMENT OF 'U' TUBES

'U' bend portion + 300mm on each leg length are heated at 1040 Degree Celsius temperature by transformer. The temperature is measured by an optical Pyrometer. Cooling is done immediately.



SUBSEQUENT TO 'U' BENDING TUBES ARE HYDRO TESTED AND STRESS RELIEVED.

STAINLESS STEEL CORRUGATED TUBES

MBM Tubes Manufactures stainless steel corrugated tubes for Heat exchangers. Corrugated tubes increase the turbulence in the flow that enables a more effective mixing and agitation that generates a higher heat transfer coefficient compared to smooth tubes at the same conditions. In many cases, the heat transfer co-efficient is almost doubled.



COIL FORMED TUBES

OD	Thickness	Specification
3.175 mm to 19.05 mm	0.5 mm to 1.65 mm	ASTM A 213, A 269 & Its Equivalent ASME, DIN & EN standard
Total Coil formed tube Length – Upto 50 Mtrs / as per customer requirement		





QUALITY CONTROL

At MBM Tubes Pvt. Ltd. Pipes / Tubes are manufactured on most modern production, equipment, whereby the applied production methods assure the highest possible standard of quality. Moreover for continuous quality assurance of control, our independent testing department is equipped with most modern testing facilities.

All our Pipes & Tubes are manufactured as per approved quality manual, we follow up production as per approved QAP which include checking right from the issue of purchase order, raw material, incoming materials, stage wise inspection during production till inspection & Dispatch.



DIMENSION INSP.



VISUAL INSP.



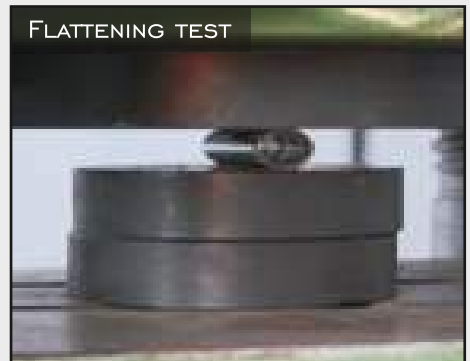
PMI TEST



TENSILE TEST

DESTRUCTIVE TESTING:

- Tensile Test
- Hardness Test
- Flattening Test
- Reverse Flattening Test
- Flaring Test
- Bend Test
- Reverse Bend Test
- IGC Test – Practice A, B, C & E
- Impact Test
- Macro & Micro Examination
- Spectro Test



FLATTENING TEST



FLARING TEST

NON-DESTRUCTIVE TESTING:

- Hydrostatic Test
- Air Under Water Test
- Eddy current Test
- PMI Test
- Ultrasonic Test
- Radiography Test
- Dye Penetrat Test
- Boroscope Test



IGC TEST



HARDNESS TEST



EDDY-CURRENT TEST



MARKING

MBM Tubes 's Packing and Dispatch department are always committed to on time Delivery of the material. Pipes & Tubes are properly packed so as it reaches customers without any damages.

TYPES OF PACKING

- Hessain Cloth Packing
- HDPE Packing
- Seaworthy Wooden Box
- Seaworthy Crate Box.
- Hexagonal Strap Packing
- Rectangular Woodan Frame



OTHER PRODUCT

PIPE FITTINGS



STANDARD FLANGES



FORGED FITTINGS



NON-STANDARD FLANGES



BENDS



SHEETS / PLATES



TUBE FITTINGS



FASTENERS





WEIGHT & THICKNESS CHART

MBM TUBES PVT. LTD.

WEIGHT & THICKNESS CHART OF PIPES

Nominal pipe size		Outside Diameter		Sch-5S		Sch-10S		Sch-10		Sch-20		Sch-30		Sch-40S		Sch-80		Sch-160		Sch-XX		
mm	inch	mm	inch	Thick (mm)	Wt (Mtr)	Thick (mm)	Wt (Mtr)	Thick (mm)	Wt (Mtr)	Thick (mm)	Wt (Mtr)	Thick (mm)	Wt (Mtr)	Thick (mm)	Wt (Mtr)	Thick (mm)	Wt (Mtr)	Thick (mm)	Wt (Mtr)	Thick (mm)	Wt (Mtr)	
6	1/8"	10.29	0.405	1	0.23	1.24	0.28	IDENTICAL TO SCH 10S		--	--	--	--	1.73	0.37	2.41	0.48	--	--	--	--	
8	1/4"	13.72	0.540	1.2	0.37	1.65	0.49			--	--	--	--	2.24	0.64	3.02	0.81	--	--	--	--	
10	3/8"	17.15	0.675	1.2	0.47	1.65	0.63			--	--	--	--	2.31	0.86	3.20	1.12	--	--	--	--	
15	0.5"	21.34	0.840	1.65	0.81	2.11	1.00			--	--	--	--	2.77	1.29	3.73	1.64	4.78	1.98	7.47	2.59	
20	3/4"	26.67	1.050	1.65	1.03	2.11	1.28			--	--	--	--	2.87	1.71	3.91	2.23	5.56	2.94	7.82	3.69	
25	1"	33.4	1.315	1.65	1.31	2.77	2.09			--	--	--	--	3.38	2.54	4.55	3.29	6.35	4.30	9.09	5.53	
32	1-1/4"	42.16	1.660	1.65	1.67	2.77	2.69			--	--	--	--	3.56	3.44	4.85	4.53	6.35	5.69	9.7	7.88	
40	1-1/2"	48.26	1.900	1.65	1.93	2.77	3.10			--	--	--	--	3.68	4.11	5.08	5.49	7.23	7.43	10.16	9.69	
50	2"	60.33	2.375	1.65	2.42	2.77	3.92			--	--	--	--	3.91	5.52	5.54	7.60	8.74	11.29	11.07	13.65	
65	2-1/2"	73.03	2.875	2.11	3.75	3.05	5.27			--	--	--	--	5.16	8.77	7.01	11.58	9.53	15.15	14.02	20.71	
80	3"	88.9	3.500	2.11	4.59	3.05	6.45			--	--	--	--	5.49	11.46	7.62	15.50	11.13	21.67	15.24	28.10	
90	3-1/2"	101.6	4.000	2.11	5.25	3.05	7.40			--	--	--	--	5.74	13.77	8.08	18.91	--	--	16.15	34.54	
100	4"	114.3	4.500	2.11	5.93	3.05	8.35			--	--	--	--	6.02	16.32	8.56	22.66	13.49	34.04	17.12	41.64	
125	5"	141.3	5.563	2.77	9.61	3.4	11.56			--	--	--	--	6.55	22.09	9.53	31.43	15.88	49.85	19.05	58.29	
150	6"	168.28	6.625	2.77	11.48	3.4	14.04			--	--	--	--	7.11	28.68	10.97	43.19	18.26	68.57	21.95	80.39	
200	8"	219.1	8.625	2.77	15.01	3.76	20.26			6.35	33.81	7.04	37.37	8.18	43.18	12.70	65.61	23.01	112.94	22.23	109.54	
250	10"	273	10.750	3.4	22.95	4.19	28.20			6.35	42.38	7.8	51.78	9.27	61.19	15.06	97.23	28.58	174.85	25.4	157.41	
300	12"	323.9	12.750	3.96	31.72	4.57	36.53			6.35	50.47	8.38	66.18	9.53	74.99	17.45	133.85	33.32	242.34	25.4	189.77	
350	14"	355.6	14.000	3.96	34.87	4.78	41.97		6.35	54.77	7.92	68.92	9.53	82.55	9.53	82.55	19.05	160.47	35.71	285.92	--	--
400	16"	406.4	16.000	4.19	42.20	4.78	48.05		6.35	62.74	7.92	78.99	9.53	94.67	9.53	94.67	21.41	206.31	40.49	370.84	--	--
450	18"	457.2	18.000	4.19	47.53	4.78	53.41		6.35	70.71	7.92	89.06	11.13	124.27	9.53	106.79	--	--	45.24	466.49	--	--
500	20"	508	20.000	4.78	60.23	5.54	68.75		6.35	78.68	9.53	118.90	12.7	157.45	9.53	118.90	--	--	50.01	573.29	--	--
550	22"	558.8	22.000	4.78	66.28	5.54	75.53		6.35	86.64	9.53	131.02	12.7	173.59	9.53	131.02	--	--	53.97	681.96	--	--
600	24"	609.6	24.000	5.54	83.76	6.35	94.45		6.35	94.61	9.53	143.14	14.27	212.64	9.53	143.14	--	--	59.54	819.75	--	--

SWG / BWG DIMENSION & WEIGHT PER METER

Gauge No.		10		12		14		16		18		19		20		22	
Dimension	SWG	BWG	SWG	BWG	SWG	BWG	SWG	BWG	SWG	BWG	SWG	BWG	SWG	BWG	SWG	BWG	
Size	OD (mm)	3.251	3.404	2.642	2.769	2.032	2.1089	1.626	1.651	1.219	1.245	1.016	1.067	0.914	0.889	0.711	0.711
1/4"	6.35	-	-	-	-	0.218	0.222	0.191	0.192	0.155	0.158	0.134	0.140	0.123	0.120	0.099	0.099
5/16"	7.93	-	-	-	-	0.297	0.305	0.254	0.257	0.203	0.206	0.174	0.182	0.159	0.155	0.127	0.127
3/8"	9.52	0.506	0.517	0.451	0.464	0.377	0.388	0.318	0.322	0.251	0.256	0.214	0.224	0.195	0.190	0.155	0.155
1/2"	12.70	0.762	0.785	0.659	0.682	0.538	0.554	0.447	0.453	0.347	0.354	0.295	0.308	0.267	0.261	0.211	0.211
5/8"	15.87	1.018	1.053	0.867	0.900	0.698	0.720	0.575	0.582	0.443	0.452	0.374	0.392	0.339	0.330	0.267	0.267
3/4"	19.05	1.274	1.321	1.076	1.118	0.858	0.886	0.703	0.713	0.539	0.550	0.455	0.476	0.411	0.401	0.323	0.323
1"	25.40	1.786	1.858	1.492	1.555	1.178	1.219	0.959	0.973	0.731	0.746	0.615	0.644	0.555	0.541	0.436	0.435
1 1/4"	31.82	2.304	2.400	1.913	1.996	1.502	1.555	1.218	1.236	0.925	0.944	0.776	0.814	0.701	0.682	-	-
1 1/2"	38.10	2.811	2.930	2.324	2.427	1.818	1.883	1.471	1.493	1.115	1.138	0.935	0.980	0.843	0.821	-	-
1 3/4"	45.45	3.404	3.551	2.806	2.932	2.189	2.268	1.768	1.794	1.338	1.365	1.120	1.175	1.010	0.983	-	-
2"	50.80	3.825	4.003	3.157	3.300	2.459	2.548	1.984	2.013	1.499	1.531	1.255	1.317	1.131	1.101	-	-
2 1/4"	57.15	4.347	4.539	3.573	3.736	2.779	2.880	2.240	2.273	1.692	1.727	1.415	-	-	-	-	-
2 1/2"	63.50	4.860	5.075	3.989	4.172	3.099	3.212	2.496	2.533	1.884	1.923	1.575	-	-	-	-	-
2 3/4"	69.85	5.372	5.612	4.405	4.608	3.419	3.544	2.752	2.794	2.076	2.119	1.735	-	-	-	-	-
3"	76.20	5.884	6.148	4.822	5.045	3.739	3.877	3.008	3.054	-	-	-	-	-	-	-	-
3 1/2"	88.90	6.908	7.220	5.654	5.917	4.379	4.541	-	-	-	-	-	-	-	-	-	-
4"	101.60	7.933	8.293	6.487	6.790	5.020	5.206	-	-	-	-	-	-	-	-	-	-

TABLE OF GAUGES

	Gauge No.	10	12	14	16	18	19	20	22
S.W.G. (Standard Wire Gauge)	Inch	0.128	0.104	0.080	0.064	0.048	0.040	0.036	0.028
	MM	3.251	2.642	2.032	1.626	1.219	1.016	0.914	0.711
B.W.G. (Birmingham Wire Gauge)	Inch	0.134	0.109	0.083	0.065	0.049	0.042	0.036	0.028
	MM	3.404	2.769	2.108	1.651	1.245	1.067	0.889	0.711



ASTM STANDARDS FOR SEAMLESS & WELDED PIPES & TUBES

	Allowable Outside Diameter Variation in mm			Allowable wall		Exact Length		Testing
	Nominal Diameter	Over	Under	Over %	Under %	Over	Under	
ASTM A - 213 Seamless Boiler Superheater & Heat Exchanger tubes	Under 25.4 25.4- 38.1 Incl. 38.1- 50.8 excl. 50.8- 63.5 excl. 63.5- 76.2 excl. 76.2- 101.6 incl.	.1016 .1524 .2032 .254 .3048 .381	.1016 .1524 .2032 .254 .3048 .381	+20 +20 +22 +22 +22 +22	-0 -0 -0 -0 -0 -0	3.175 3.175 3.176 3.76 4.76 4.76	0 0 0 0 0 0	Tension Test Flattening Test Flaring Test Hardness Test 100% Hydrostatic Test Refer to ASTM A - 1016
ASTM - A 249 Welded Boiler Superheater, Heat Exchanger & Condenser Tubes	Under 25.4 25.4- 38.1 Incl. 38.1- 50.8 excl. 50.8- 63.5 excl. 63.5- 76.2 excl. 76.2- 101.6 incl.	.1016 .1524 .2032 .254 .3048 .381	.1016 .1524 .2032 .254 .3048 .381	+10 +10 +10 +10 +10 +10	-10 -10 -10 -10 -10 -10	3.175 3.175 3.175 4.76 4.76 4.76	0 0 0 0 0 0	Tension Test Flattening Test Flaring Test * Reverse Bend Test Hardness Test 100% Hydrostatic Test * Reverse Flattening Test Refer to ASTM A - 1016 * Whenever Applicable
ASTM - A 269 Seamless & Welded Tubing for General Service	Upto 12.7 12.7- 38.1 excl. 38.1- 88.9 excl. 88.9- 139.7 excl. 139.7 203.2 excl.	.13 .13 .25 .38 .76	.13 .13 .25 .38 .76	+15 +10 +10 +10 +10	-15 -10 -10 -10 -10	3.2 3.2 4.8 4.8 4.8	0 0 0 0 0	Flare Test (Seamless Tube) Flange Test (Welded only) Hardness Test Reverse Flattening Test (Welded Only) 100% Hydrostatic Test Refer to ASTM A - 1016
ASTM - A 312 Seamless & Welded Austenitic Pipe	10.29 - 48.26 48.3 - 73.03 73.03 - 114.3 114.3 - 219.08	0.40 0.80 0.80 1.60	0.80 0.80 0.80 0.80	+20 % -12.5 % +22.5 % -12.5 %				Tension Test Flattening Test 100% Hydrostatic Test
ASTM A-270 Seamless & Welded Austenitic Pipes	25.4 38.1 50.8 63.5 76.2 101.6	.05 .05 .05 .05 .08 .08	.20 .20 .28 .28 .30 .38	+12.5 +12.5 +12.5 +12.5 +12.5 +12.5	-12.5 -12.5 -12.5 -12.5 -12.5 -12.5	3.2 3.2 3.2 3.2 3.2 3.2	0 0 0 0 0 0	Reverse Flattening Test 100% Hydrostatic Test External Polish on all tubes Refer to ASTM A - 1016
ASTM A -268 Seamless & Welded Ferritic & Martengitic Stainless Steel Tubes	under 12.7 12.7 38.1 incl. 38.1 excl. 88.9 incl. 88.9- 168.3 excl.	.13 .13 .25 .38	.13 .13 .25 .38	+15 +10 +10 +10	-15 -10 -10 -10	3.2 3.2 4.8 4.8	0 0 0 0	Tension Test, Flaring Test, Flange Test, (ERW only) Hardness Test, Reverse Fla- ttening Test, 100% hydrostatic Test, Refer to ASTM A - 450
ASTM A 358 for Welded big diameter Pipes	for all sizes 5"NB & above	+0.5%	-0.5%	-	-0.3 mm	Customer's Specification		Transverse tension test, Transverse guided bend test Hydrostatic test, radiographic examination (as specified) dye penetrant (optional)
ASTM A 688 For Welded Feed Water- heater 'U' tubes	Under 25.4 mm	.1016	.1016	+20 +10	-0 (for min wall thk.) -10 (for Avg. wall thk.)	3 to 13	0	Tension, Hardness, Corrosion, Reverse bend, Flange, Flattening, Hydrostatic Test, Pneumatic Test, Non Destructive Test
ASTM A 778 Austenitic Stainless Steel Tubular Product	As per Table 1 Welded Unannealed ASTM A 530			12.5%	12.5%	RL 10ft > 3 meter FL 6 meter + 6mm - 0mm		Transverse Tension Test Transverse Guided Test

* Eddy Current non destructive test & inter granular corrosion test can be offered on request

EQUIVALENT EN SPECIFICATIONS

EN 10216 - 5	Seamless Stainless Steel Tubes for Pressure Purpose
EN 10297 - 2	Seamless Stainless Steel for Mechanical & General Engineering Purpose
EN 10246 - 2	Non - Destructive Testing of Steel Tubes
EN ISO 1127	Dimensions & Tolerances of Stainless Steel Tubes

Tolerance on OD	Permissible Deviation on OD (Whichever is Greater)	Tolerance on THK	Permissible Deviation on THK (Whichever is Greater)
D1	± 1.5 % or ± 0.75 mm	T1	± 15 % or ± 0.6 mm
D2	± 1 % or ± 0.5 mm	T2	± 12.5 % or ± 0.4 mm
D3	± 0.75 % or ± 0.3 mm	T3	± 10 % or ± 0.2 mm
D4	± 0.5 % or ± 0.1 mm	T4	± 7.5 % or ± 0.15 mm

CHEMICAL COMPOSITION OF STAINLESS STEEL

CHEMICAL COMPOSITIONS (%)

Type	C	Mn	P	S	Si	Cr	Ni	Others
201	0.15	5.50 - 7.5	0.060	0.030	1.00	16.0 - 18.0	3.5 - 5.5	N 0.25
202	0.15	7.5 - 10.0	0.060	0.030	1.00	17.0 - 19.0	4.0 - 6.0	N 0.25
301	0.15	2.00	0.045	0.030	1.00	16.0 - 18.0	6.0 - 8.0	N 0.25
302	0.15	2.00	0.045	0.030	0.75	17.0 - 19.0	8.0 - 10.0	N-0.10
304	0.08	2.00	0.045	0.030	0.75	18.0 - 20.0	8.0 - 10.5	N 0.25
304L	0.03	2.00	0.045	0.030	0.75	18.0 - 20.0	8.0 - 12.0	N 0.25
304H	0.04 - 0.010	2.00	0.045	0.030	0.75	18.0 - 20.0	8.0 - 10.5	
305	0.12	2.00	0.045	0.030	0.75			
309S	0.08	2.00	0.045	0.030	0.75	22.0 - 24.0	12.0 - 15.0	
310S	0.08	2.00	0.045	0.030	1.50	24.0 - 26.0	19.0 - 22.0	
310H	0.04 - 0.10	2.00	0.045	0.030	0.75	24.0 - 26.0	19.0 - 22.0	
316	0.08	2.00	0.045	0.030	0.75	16.0 - 18.0	10.0 - 14.0	Mo 2.0-3.0, N 0.10
316L	0.03	2.00	0.045	0.030	0.75	16.0 - 18.0	10.0 - 14.0	Mo 2.0-3.0,-0.10
316H	0.04 - 0.10	2.00	0.045	0.030	0.75	16.0-18.0	10.0 - 14.0	
316Ti	0.08	2.00	0.045	0.030	0.75	16.0 - 18.0	10.0 - 14.0	N 0.10, Ti 5 (C+N) Min, 0.70 Max
317	0.08	2.00	0.045	0.030	0.75	18.0 - 20.0	11.0 - 15.0	Mo 3.0-4.0, N 0.10
317L	0.03	2.00	0.045	0.030	0.75	18.0 - 20.0	11.0 - 15.0	Mo 3.0-4.0, N 0.10
321	0.08	2.00	0.045	0.030	0.75	17.0 - 19.0	9.0 - 12.0	Ti 5 (C+N) (Min, 0.70 Max
321H	0.04 - 0.10	2.00	0.045	0.030	0.75	17.0 - 20.0	9.0 - 13.0	
347	0.08	2.00	0.045	0.030	0.75	17.0 - 19.0	9.0 - 13.0	Cb 10 x C Min, 1.0 Max
347H	0.04 - 0.10	2.00	0.040	0.030	1.00	17.0 - 20.0	9.0 - 13.0	
904L	0.02	2.00	0.045	0.030	1.00	19.0 - 23.0	23.0 - 28.0	Mo 4.0-5.0, Cu 1.0-2.0
409L	0.03	1.00	0.030	0.040	1.00	10.50 - 11.75	0.50	Ti 6 (c) Min - 0.75 Max, Cb 0.17 Max
410	0.15	1.00	0.040	0.030	1.00	11.50 - 13.50	0.75	
410S	0.08	1.00	0.030	0.040	1.00	11.50 - 13.50	0.60	
420	0.15 (Min)	1.00	0.045	0.030	1.00	10.50 - 15.50	1.0 - 2.5	Mo 0.20-1.20
430	0.12	1.00	0.030	0.040	1.00	16.0 - 18.0	0.75	

STAINLESS STEEL - COMPARISON OF GRADE SPECIFICATIONS

Grade	UNS	Old British		W. No	Name	Swedish SS	JIS
		BS	En				
201	S20100	301SS21	-	1.4310	X10CrNi18-8	2331	SUS 201
202							SUS 202
301	S30100	301S21	-	1.4310	X10CrNi18-8	2331	SUS 301
302	S30200	302S25	58A	1.4319	-	-	SUS 302
304	S30400	304S31	58E	1.4301	X5CrNi18-10	2332	SUS 304
304L	S30403	304S11	-	1.4306	X2CrNi18-11	2352	SUS 304L
305	S30500	305S19	-	1.4312	-	-	SUS 305
309S	S30908	309S24	-	1.4833	X12CrNi23-13	-	SUS 309S
310S	S31008	310S16	-	1.4845	X8CrNi25-21	2361	SUS 310S
316	S31600	316S31	58H,58J	1.4401	X5CrMo17-12-2	2347	SUS 316
316L	S31603	316S11	-	1.4404	X2CrNiMo17-12-2	2348	SUS 316L
316Ti	S31635	320S31	-	1.4571	X10CrNiMoTi18-10	2350	SUS 316Ti
317		316S16					
317L	S31703	317S12	-	1.4438	X2CrNiMo18-16	2367	SUS 317L
321	S32100	321S31	58B,58C	1.4541	X6CrNiTi18-10	2337	SUS 321
347	S34700	347S31	58G	1.4550	X6CrNiNb18-10	2338	SUS 347
904L	N08904	904S13	-	1.4539	X1NiCrMoCuN25-20-5	2562	
409L				1.4512	X2CrTi12		
410	S41000	410S21	56A	1.4006	X12Cr13	2302	SUS 410
410S				1.4000	X6Cr13		
420	S42000	420S37	56C	1.4021	X20Cr13	2303	SUS 420J1
430	S43000	430S17	60	1.4016	X8Cr17	2320	SUS 430





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