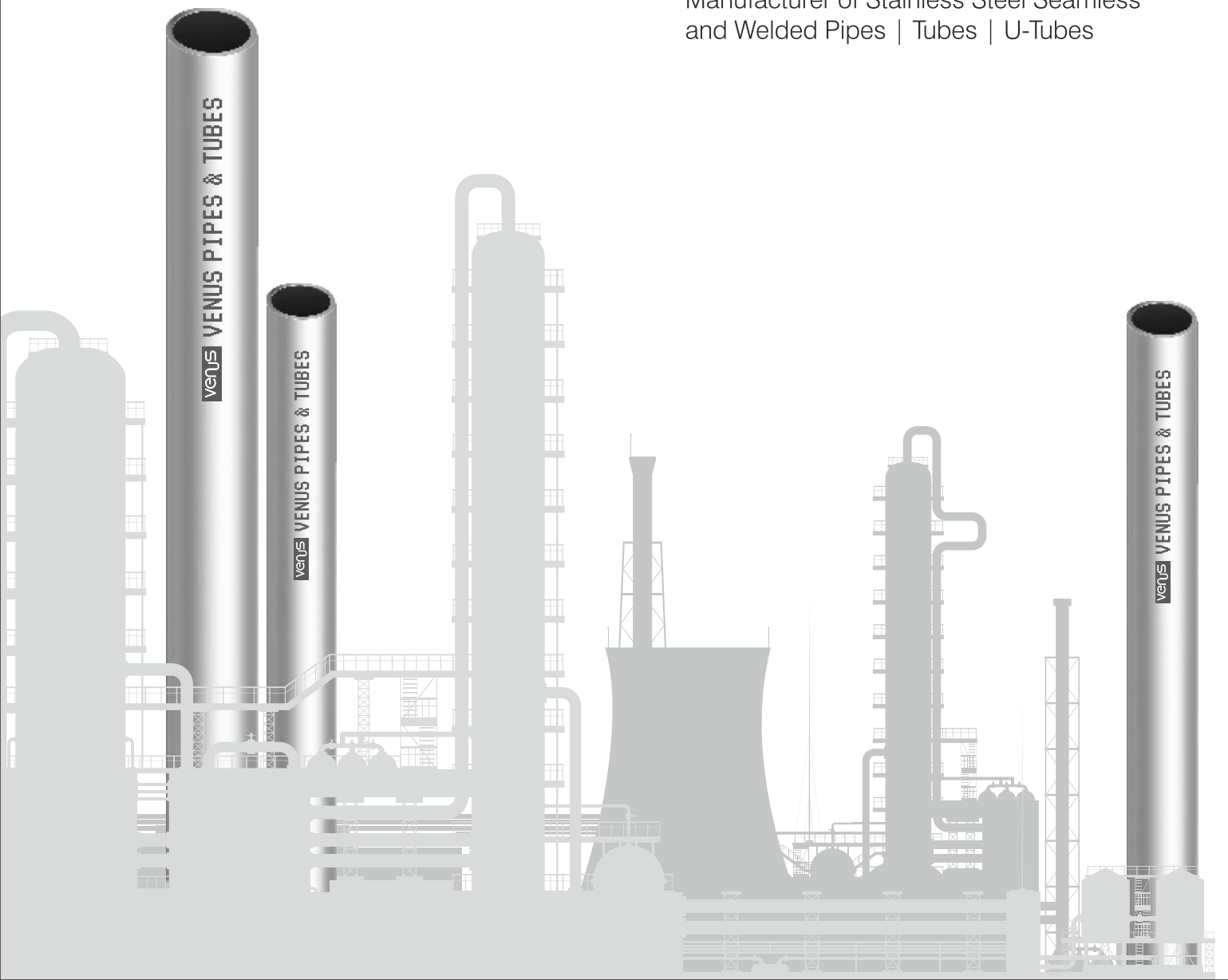


VENUS[®]
PIPES AND TUBES

#RedefiningEndurance

AT THE HEART OF EVERY INDUSTRY

Manufacturer of Stainless Steel Seamless
and Welded Pipes | Tubes | U-Tubes



A WORLD OF PRECISION PERFORMANCE

Pipes and Tubes are the arteries of industries, carrying large quantities of loads every hour of every day. That's why the combination of precision and performance is vital in this industry. And as leading manufacturers of premium Stainless Steel Pipes and Tubes, we offer our clients powerful products, designed for precision performance and enduring enough to withstand even the most demanding conditions.

VENUS
PIPES AND TUBES

#RedefiningEndurance

Vision

To become the preferred choice of industrial domains, by harnessing the power of extraordinary technology and focus on consistent quality par excellence.

Mission

- To develop dynamic working partnerships with our clients
- To ensure industry-best turnarounds from quoting to product delivery
- To continuously upgrade our technologies & capabilities to ensure world-class performance of our products

Quality

**A NEW BENCHMARK OF QUALITY
MUST BE SET EVERYDAY**

This is our business motto and it applies to each product and process that we undertake. To achieve this, we have created a strong quality and testing process that ensures consistency, and durability of our products are second to none in the market.

From raw materials sourced from only trusted vendors to multi-step testing of products using cutting-edge methods, we implement contemporary protocols to keep our products at par with global market requirements. This has allowed us to garner approvals and certifications from renowned engineering consultants, inspection agencies and statutory authorities.



Equipped with the latest production technologies and driven by experienced engineers, we have emerged as one of the most trusted suppliers of stainless steel pipes and tubes in India as well as across the globe. Our pipes and tubes are known across domains for their superior performance, non-corrosive nature, durability and high-pressure conductivity.

Our comprehensive production strength coupled with a strong Quality Management System and in-house quality control lab puts us at the forefront

of the industry in terms of quality and production capacity which is over 36000 Metric Tons annually. With our streamlined approach, competitive pricing and a strong global nexus, we are an ideal choice for all stainless steel pipes and tubes.

Collectively, our leaders hail with an experience of over 15 years in the business and have played an instrumental role in taking us to new horizons of success. They also continue to be a positive influence on our employees as well as the business as a whole.



Manufacturing

Our commitments are powered by an infrastructure that defines our core purpose - of delivering Stainless Steel Seamless and Welded Pipes and Tubes. Spread across an area of 100,000 Sq. Mts., our manufacturing floor operates on cutting-edge equipment that give our products a class-apart value from quality to price.

Operating at an annual capacity of 36000 Metric Tons, our capabilities are scalable enough to accommodate the needs of every client of any size, with ease and efficiency. A strong inventory and diligent staff of professionals further ensure that efficiency of our manufacturing always remains at its maximum.



Stainless Steel Hydraulic & Instrumentation Tubes

Outside Diameter Range	6 mm to 76 mm
Wall Thickness Range	0.50 mm to 8.0 mm
Length	As per Requirement. Maximum up to 24 Meter long
Grades	304/L/H/LN, 316/L/H/LN/Ti, 309, 310/L/H/S, 317/L/H, 321/H, 347/H, 405, 409/L, 410, 430/Ti, 436, 439, 1.4301, 1.4306, 1.4571, 1.4541, 1.4401, 1.4404 UNS S31500, UNS S31803, UNS S2205, UNS S32750, UNS S32760
Specifications	ASTM A-213, A-269, A-789, EN 10216-5
Supply Condition	Solution-annealed, pickled and passivated, Bright Annealed
Applications	Nuclear & Thermal Power generation • Oil & Gas • Process Industries • Chemical & Fertilizer • Nuclear Power • Food & Beverage Processing • Automotive • Aerospace • Medical & Pharmaceutical

Products

Stainless Steel High Precision & Heat Exchanger Tubes

Outside Diameter Range	6 mm to 101.60 mm
Wall Thickness Range	0.70 mm to 8.0 mm
Length	As per Requirement. Maximum up to 24 Meter long
U- Tubes	As per Customer's Drawing, Developed length up to 36 Meter
Grades	304/L/H/LN, 316/L/H/LN/Ti, 309, 310/L/H/S, 317/L/H, 321/H, 347/H, 405, 409/L, 410, 430/Ti, 436, 439, 1.4301, 1.4306, 1.4571, 1.4541, 1.4401, 1.4404 UNS S31500, UNS S31803, UNS S2205, UNS S32750, UNS S32760
Specifications	Seamless – ASTM A-213, A-268, A-269, A-270, A-789, EN 10216-5 Welded – ASTM A-249, A-268, A-269, A-270, A-554, A-688, A-789, A-803, EN-10217-7
Supply Condition	Solution-annealed, pickled and passivated Bright Annealed
Applications	Heat Exchangers • Pressure Vessels • Chemical & Fertilizer • Marine Equipments • Refinery & Petrochemical • Process Industry • Dairy / Pharmaceutical Industry • Nuclear Power Generation • Automotive • Aerospace

Contact sales for more available grades

*Specifications as per ASTM, ASME, DIN, JIS (JAPAN), EN, NF(ANOR) also available

Stainless Steel Seamless Pipes

Outside Diameter Range	1/8" NB to 12" NB
Wall Thickness Range	SCH 5S to SCH XXS
Length	As per Requirement. Maximum up to 24 Meter long
Grades	304/L/H/LN, 316/L/H/LN/Ti, 309, 310/L/H/S, 317/L/H, 321/H, 347/H, UNS S31500, UNS S31803, UNS S2205, UNS S32750, UNS S32760
Specifications	ASTM A-312, A-790
Supply Condition	Solution-Annealed, pickled and passivated. Can be supplied in other conditions on requirement.
Applications	Onshore and Offshore Oil and Gas Production, Exploration and Transport (OCTG – Oil Country Tubular Goods) • Chemical & Petrochemical • Energy & Power Generation • Mechanical & Plant Engineering • Marine Equipments • Pulp & Paper • Pharmaceutical Industry

Contact sales for more available grades

*Specifications as per ASTM, ASME, DIN, JIS (JAPAN), EN, NF(ANOR) also available



Applications

- Heat Exchangers
- Refineries
- Power Plant
- Nuclear
- Pharmaceuticals
- Oil & Gas
- Chemicals
- Fertilizer
- Aerospace
- Automobiles
- Food Processing
- Engineering

Manufacturer & Exporter of Stainless Steel Welded & Seamless Pipes | Tubes | U - Tubes

Stainless Steel Welded Pipes

Outside Diameter Range	1/8" NB to 20" NB
Wall Thickness Range	SCH 5S to SCH 80S
Length	As per Requirement. Maximum up to 24 Meter long
Grades	304/L/H/LN, 316/L/H/LN/Ti, 309, 310/L/H/S, 317/L/H, 321/H, 347/H, UNS S31500, UNS S31803, UNS S2205, UNS S32750, UNS S32760
Specifications	ASTM A-312, A-554, A-778, A-790
Supply Condition	Solution-Annealed, pickled and passivated. Can be supplied in other conditions on requirement.
Applications	Chemical & Petrochemical • Gas Industry • Power Generation • Mechanical & Plant Engineering • Marine Equipment's • Pulp & Paper • Pharmaceutical Industry

Stainless Steel LSAW Pipes

Outside Diameter Range	8" NB TO 56" NB
Wall Thickness Range	4.0 mm to 50.0 mm
Length	As per Requirement. Maximum up to 12 Meter long.
Grades	304/L/H/LN, 316/L/H/LN/Ti, 309, 310/L/H/S, 317/L/H, 321/H, 347/H, 904/L, UNS S31500, UNS S31803, UNS S2205, UNS S32750, UNS S32760
Specifications	ASTM A-358, A-409, A-778, A-928
Supply Condition	Solution-Annealed, pickled and passivated.
Applications	Onshore and Offshore Oil and Gas Production, Exploration and Transport (OCTG – Oil Country Tubular Goods) • Chemical & Petrochemical • Energy and Power Generation • Mechanical and Plant Engineering • Water and Waste Water Management



Heat Exchangers



Refineries



Power Plant



Pharmaceuticals



Oil & Gas



Chemicals



Aerospace



Automobiles



Food Processing



Nuclear



Fertilizer



Engineering



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Quality Control

Non-Destructive Testing

1	Eddy Current Test	Performed by Level-I, II personnel at Technofour Make Eddy Current System to detect surface and sub-surface flaws
2	Liquid Penetration Test	Carried out by DPT kit to detect surface flaws
3	Visual & Dimensional Inspection	Tubular are checked for imperfection and dimensional conformity by Digital Vernier Caliper, Micrometer, Ultra-sonic Thickness Gauge, Measuring Tape of valid calibration
4	Hydro Testing	Performed by qualified personnel to detect leak-tightness of Tubular at calculated pressure at Hydro-Tester Bench equipped with Pressure Gauge of Valid Calibration
5	Pneumatic Test	Air under water test to check the leak-tightness of tubing
6	Real Time Radiography	Digital radiography to detect defect in weld seam
7	Automatic ultrasonic Testing	Precise immersion ultrasonic set up for detection of surface and sub-surface flow in tubular
8	Remote Visual Inspection	Boroscopic inspection of pipes and tubes
9	Ferrite test	Measurement of Ferrite content in weldments
10	Positive Material Identification	Carried out for sorting by XRF Analyzer

Destructive Testing

1	Impact Testing	Measurement of impact toughness of steel pipes @ room and lower temperature by qualified ASTM/IS impact testing machine traceable to NIST.
2	Tensile Testing (Proof Load, UTS & % Elongation)	40T and 100T Universal Testing Machine integrated with Software to check Tensile Strength, Yield strength (including 0.2%, 1.0% Proof Test), Percentage of Elongation.
3	Chemical Testing- Product analysis	Full chemical composition is analyzed with high-precision Optical Emission Spectrometer.
4	Rockwell and superficial Hardness Testing	Hardness Test is performed in HRC/HRB Superficial Scale at Rockwell Hardness Machine with pre-calibrated with Master Block
5	Flattening/Reverse Flattening Test	Flattening testing performed to reveal the compression strength of the tube
6	Guided Bend/Reverse Bend Test	Bend testing is performed to evaluate the Ductility and Soundness of weld, to evaluate the effectiveness of Heat Treating Process
7	Flaring/Flange Test	The flaring and Flange test serves to establish the forming behavior of tubes or pipes which is expanded to a specific degree.
8	Micro/Macro Examination	Micro- Structure is analyzed for Grain-Size, Phase-balance, phase precipitation, morphology, inclusions, defects etc. at various magnification (20X,50X,100X,400X,1000X) by advanced micro-scope integrated with Image Analyzer Software
9	Inter Granular Corrosion test- IGC Practice A, E & C (ASTMA-262), Practice W,X, Y,Z (ASTM A-763), Method A, C (ASTM A-923) G48,G36	Carried out with well-equipped kit to detect susceptibility to inter-granular attack for various Austenitic, Ferritic and Duplex Stainless Steel

Grade Comparison

TYPE OF MATERIAL	USA AISI	France AFNOR	Germany DIN 17006	Germany W.N. 17007	Italy UNI	Japan JIS	Russia GOST	Spain UNE	Sweden SIS	UK BSI	European Union EUROENORM	
AUSTENITIC GRADES	201	--	--	--	--	SUS 201	--	--	--	--	--	
	301	Z 12 CN 17-07	X 12 CrNi 17 7	1.4310	X 12 CrNi 1707	SUS 301	--	X 12 CrNi 17-07	23 31	301S21	X 12 CrNi 17 7	
	302	Z 10 CN 18-09	X 5 CrNi 18 7	1.4319	X 10 CrNi 1809	SUS 302	12KH18N9	X 10 CrNi 18-09	23 31	302S25	X 10 CrNi 18 9	
	303	Z 10 CNF 18-09	X 10 CrNiS 18 9	1.4305	X 10 CrNiS 1809	SUS 303	--	X 10 CrNiS 18-09	23 46	303S21	X 10 CrNiS 18 9	
	304	Z 6 CN 18-09	X 5 CrNi 18 10	1.4301	X 5 CrNi 1810	SUS 304	08KH18N10	X 6 CrNi 19-10	23 32	304S15	X 6 CrNi 18 10	
	304 N	--	--	--	X 5 CrNiN 1810	SUS 304N1	06KH18N11	--	--	--	304S16	--
	304 H	--	--	--	X 8 CrNi 1910	SUS F 304H	--	X 6 CrNi 19-10	--	--	--	--
	304 L	Z 2 CN 18-10	X 2 CrNi 18 11	1.4306	X 2 CrNi 1911	SUS 304L	03KH18N11	X 2 CrNi 19-10	23 52	304S11	X 3 CrNi 18 10	
	304LN	Z 2 CN 18-10-Az	X 2 CrNiN 18 10	1.4311	X 2 CrNiN 1811	SUS 304LN	--	--	23 71	--	--	--
	305	Z 8 CN 18-12	--	--	X 8 CrNi 1812	SUS 305	--	X 8 CrNi 18-12	23 33	305S19	X 8 CrNi 18 12	
	309	Z 15 CN 24-13	X 15 CrNiS 20 12	1.4828	X 16 CrNi 2314	SUH 309	--	--	--	309S24	X 15 CrNi 23 13	
	309 S	--	--	--	X 6 CrNi 2314	SUS 309S	20KH23N18	--	--	--	--	X 6 CrNi 22 13
	310	--	X 12 CrNi 25 21	1.4845	X 22 CrNi 2520	SUH 310	10KH23N18	--	--	310S24	--	--
	310 S	Z 12 CN 25-20	X 12 CrNi 25 20	1.4842	X 5 CrNi 2520	SUS 310S	20KH25N20S2	--	23 61	--	--	X 6 CrNi 25 20
	314	Z 12 CNS 25-20	X 15 CrNiS 25 20	1.4841	X 16 CrNiS 2520	--	--	--	--	--	--	X 15 CrNiS 25 20
	316	Z 6 CND 17-11	X 5 CrNiMo 17 12 2	1.4401	X 5 CrNiMo 1712	SUS 316	--	X 6 CrNiMo 17-12-03	23 47	316S31	X 6 CrNiMo 17 12 2	
316 H	--	--	--	X 8 CrNiMo 1713	--	03KH17N14M2	X 6 CrNiMo 17-12-03	--	--	--	--	
316 L	Z 2 CND 17-12	X 2 CrNiMo 17 13 2	1.4404	X 2 CrNiMo 1712	SUS 316L	--	X 2 CrNiMo 17-12-03	23 48	316S11	X 3 CrNiMo 17 12 2		
316 L	Z 2 CND 17-13	X 2 CrNiMo 18 14 3	1.4435	X 2 CrNiMo 1713	--	--	X 2 CrNiMo 17-12-03	23 53	316S13	X 3 CrNiMo 17 13 3		
316LN	Z 2 CND 17-12-Az	X 2 CrNiMoN 17 12 2	1.4406	X 2 CrNiMoN 1712	SUS 316LN	03KH16N15M3	--	--	--	--	--	

TYPE OF MATERIAL	USA AISI	France AFNOR	Germany DIN 17006	Germany W.N. 17007	Italy UNI	Japan JIS	Russia GOST	Spain UNE	Sweden SIS	UK BSI	European Union EUROENORM	
AUSTENITIC GRADES	316Ti	Z 6 CNDT 17-12	X 6 CrNiMoTi 17 12 2	1.4571	X 6 CrNiMoTi 1712	--	08KH17N13M2T	X 6 CrNiMoTi	23 50	320S31	X 6 CrNiMoTi 17 12 2	
	317	--	--	--	X 5 CrNiMo 1815	SUS 317	--	17-12-03	23 66	317S16	--	
	317 L	Z 2 CND 19-15	X 2 CrNiMo 18 16 4	1.4438	X 2 CrNiMo 1815	SUS 317L	--	--	23 67	317S12	X 3 CrNiMo 18 16 4	
	330	Z 12NCS 35-16	X 12 NiCrSi 36 16	1.4864	--	SUH 330	08KH18N10T	--	--	--	--	--
	321	Z 6 CNT 18-10	X 6 CrNiTi 18 10 X 12	1.4541	X 6 CrNiTi 1811	SUS 321	12KH18N10T	X 6 CrNiTi 18-11	23 37	321S31	X 6 CrNiTi 18 10	
		--	--	--	CrNiTi 18 9	--	--	--	--	--	--	--
	329	--	X 8 CrNiMo 27 5	1.4460	--	SUS 329J1	--	--	23 24	--	--	--
	347	Z 6 CND 18-10	X 6 CrNiNb 18 10	1.4550	X 6 CrNiNb 1811	SUS 347	--	X 6 CrNiNb 18-11	23 38	347S31	X 6 CrNiNb 18 10	
	347 H	--	--	--	X 8 CrNiNb 1811	SUS F 347H	--	X 7 CrNiNb 18-11	--	--	--	--
	DUPLEX & SUPER DUPLEX GRADES	UNS31803	--	X 2 CrNiMoN 22 5	1.4462	--	--	--	--	--	--	--
	UNS32760	Z 3 CND 25-06Az	X 3 CrNiMoN 25 7	1.4501	--	--	12KH13	--	--	--	--	
MARTENSITIC AND FERRITIC GRADES	403	Z 12 C 13	X 6 Cr 13	1.4000	X 12 Cr 13	SUS 403	--	X 6 Cr 13	23 02	403S17	X 10 Cr 13	
			X 10 Cr 13	1.4006	--	--	--	--	--	--	X 12 Cr 13	
			X 15 Cr 13	1.4024	--	--	--	--	--	--	--	
	405	Z 6 CA 13	X 6 CrAl 13	1.4002	X 6 CrAl 13	SUS 405	--	X 6 CrAl 13	--	405S17	X 6 CrAl 13	
	409	Z 6 CT 12	X 6 CrTi 12	1.4512	X 6 CrTi 12	SUH 409	--	--	--	409S19	X 5 CrTi 12	
	410	Z 10 C 13	X 6 Cr 13	1.4000	X 12 Cr 13	SUS 410	08KH13	X 12 Cr 13	23 02	410S21	X 12 Cr 13	
		X 10 Cr 13	1.4006	--	--	--	--	--	--	--		
		X 15 Cr 13	1.4024	--	--	--	--	--	--	--		
410 S	Z 6 C 13	X 6 Cr 13	1.4000	X 6 Cr 13	SUS 410S	--	--	23 01	403S17	X 6 Cr 13		

Chemical Composition of Stainless Steel

ASTM GRADE	UNS GRADE	DIN EN GRADE	STEEL NAME	JIS GARDE	C	Mn	P	S	Si	Cr	Ni	Mo	N	Nb	Ti	Cu	Al	W	B
TP 304	S30400	1.4301	X2CrNi18-10		0.080	2.00	0.045	0.030	1.00	18.0-20.0	8.00-11.0								
				SUS304TB	0.070	2.00	0.040	0.015	1.00	17.0-19.5	8.00-10.5		0.10Max						
TP 304L	S30403	1.4307	X2CrNi18-9		0.035	2.00	0.045	0.030	1.00	18.0-20.0	8.00-11.0								
				SUS304LTB	0.030	2.00	0.040	0.015	1.00	17.5-19.5	8.00-10.0		0.10 Max						
TP 304H	S30409	1.4948	X6CrNi18-10		0.04-0.10	2.00	0.045	0.030	1.00	18.0-20.0	8.00-11.0								
				SUS304HTB	0.04-0.08	2.00	0.035	0.015	1.00	17.0-19.0	8.00-11.0								
TP 310S	S31008	1.4845	X8CrNi25-21		0.080	2.00	0.045	0.030	1.00	18.0-20.0	8.00-11.0								
				SUS310STB	0.100	2.00	0.045	0.015	1.50	24.0-26.0	19.00-22.0		0.11 Max						
TP 310H	S31009	1.4335	X1CrNi25-21		0.080	2.00	0.040	0.030	1.50	24.0-26.0	19.00-22.0								
					0.04-0.10	2.00	0.045	0.030	1.00	24.0-26.0	19.00-22.0								
TP 316	S31500	1.4401	X5CrNiMo17-12-2		0.020	2.00	0.025	0.010	0.25	24.0-26.0	20.00-22.0	0.20 Max							
				SUS316TB	0.080	2.00	0.045	0.030	1.00	16.0-18.0	11.00-14.0	2.00-3.0							
TP 316L	S31603	1.4404	X2CrNiMo17-12-2		0.070	2.00	0.040	0.015	1.00	16.5-18.5	10.00-13.0	2.00-2.5	0.10 Max						
				SUS316LTB	0.080	2.00	0.040	0.030	1.00	16.0-18.0	10.00-14.0	2.00-3.0							
TP 316H	S31609	1.4918	X6CrNiMo17-13-2		0.035	2.00	0.045	0.030	1.00	16.0-18.0	10.00-14.0	2.00-3.0							
				SUS316HTB	0.030	2.00	0.040	0.015	1.00	16.5-18.5	11.00-13.0	2.00-2.5							
TP 316 Ti	S31635	1.4571	X6CrNiMoTi17-12-2		0.04-0.10	2.00	0.045	0.030	1.00	16.0-18.0	11.00-14.0	2.00-3.0							
				SUS316TiTB	0.04-0.08	2.00	0.035	0.015	0.75	16.0-18.0	12.00-14.0	2.00-2.5							
					0.080	2.00	0.045	0.030	0.75	16.0-18.0	11.00-14.0	2.00-3.0	0.10 Max		5(C+N)-0.70				
TP 321	S32100	1.4541	X6CrNiTi18-10		0.080	2.00	0.040	0.015	1.00	16.5-18.5	10.50-13.5	2.00-2.5			5XC TO 0.70				
				SUS321TB	0.080	2.00	0.040	0.030	1.00	16.0-18.0	10.00-14.0	2.00-3.0			5XC Min				
TP 321H	S32109	1.4941	X5CrNiTiB18-10		0.080	2.00	0.045	0.030	1.00	17.0-19.0	9.00-12.0				5(C+N)-0.70				
				SUS321HTB	0.04-0.10	2.00	0.040	0.030	1.00	17.0-19.0	9.00-13.0				5XC TO 0.70				
					0.04-0.10	2.00	0.035	0.015	1.00	17.0-19.0	9.00-12.0				5XC Min				
TP 347	S34700	1.455	X5CrNiNb18-10		0.04-0.08	2.00	0.030	0.030	0.75	17.0-20.0	9.00-13.0				5(C+N)-0.70				
				SUS347TB	0.080	2.00	0.045	0.030	1.00	17.0-20.0	9.00-13.0				4XC - 0.60				
TP 347H	S34709	1.4912	X7CrNiNb18-10		0.080	2.00	0.040	0.015	1.00	17.0-19.0	9.00-12.0			10XC-1.10					0.0015 - 0.00050
				SUS347HTB	0.080	2.00	0.040	0.030	1.00	17.0-19.0	9.00-13.0			10XC - 1.0					
					0.04-0.10	2.00	0.045	0.030	1.00	17.0-19.0	9.00-13.0			10XC Min					
TP 405	S40500	1.4002	X6CrAl13		0.04-0.10	2.00	0.040	0.015	1.00	17.0-19.0	9.00-12.0		0.10 Max	5XC-1.10					
					0.04-0.10	2.00	0.040	0.015	1.00	17.0-19.0	9.00-12.0			10XC - 1.2					
					0.04-0.10	2.00	0.030	0.030	1.00	17.0-19.0	9.00-13.0			8XC-1.00					
TP 410	S41000	1.4006	X12Cr13		0.080	1.00	0.040	0.030	1.00	11.5-14.5	0.50 Max						0.10-0.30		
					0.080	1.00	0.040	0.015	1.00	12.0-14.0							0.10-0.30		
TP 430	S43000	1.4016	X6Cr17		0.150	1.00	0.040	0.030	1.00	11.5-13.5									
					0.018-0.15	1.50	0.040	0.015	1.00	11.5-13.5	0.75								
	UNS S31803				0.080	1.00	0.040	0.015	1.00	16.0-18.0									
2205	UNS S32205				0.030	2.00	0.030	0.020	1.00	21.0-23.0	4.50-6.50	2.50-3.5	0.08-0.20						
					0.030	2.00	0.030	0.020	1.00	22.0-23.0	4.50-6.50	3.00-3.5	0.14-0.20						
		1.4452	X2CrNiMoN22-5-3		0.030	2.00	0.035	0.015	1.00	21.0-23.0	4.50-6.50	2.50-3.5	0.10-0.22						
2507	UNS S32750	1.441	X2CrNiMoN25-7-4		0.030	1.20	0.030	0.020	0.90	24.0-26.0	6.00-8.0	3.00-5.0	0.24-0.30			0.50 Max			
					0.030	2.00	0.035	0.015	1.00	24.0-26.0	6.00-8.0	3.00-4.5	0.24-0.35						
	UNS S32760				0.050	1.00	0.030	0.010	1.00	24.0-26.0	6.00-8.0	3.00-4.0	0.20-0.30			0.50-0.10		0.50-1.00	
		1.4501	X2CrNiMoCuWN25-7-4		0.030	1.00	0.035	0.015	1.00	24.0-26.0	6.00-8.0	3.00-4.0	0.20-0.30				0.50-1.00		

Pipe Size Chart

DN	DN	OD	Sch 5S	Sch 5	Sch 10S	Sch 10	Sch 20	Sch 30	STD WT	Sch 40S	Sch 40	Sch 60	Sch XS	Sch 80S	Sch 80	Sch 100	Sch 120	Sch 140	Sch 160	Sch XXS	
inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/8	6	10.3	-	-	1.24	1.24	-	-	1.73	1.73	1.73	-	2.41	2.41	2.41	-	-	-	-	-	-
1/4	8	13.7	-	-	1.65	1.65	-	-	2.24	2.24	2.24	-	3.02	3.02	3.02	-	-	-	-	-	-
3/8	10	17.1	-	-	1.65	1.65	-	-	2.31	2.31	2.31	-	3.20	3.20	3.20	-	-	-	-	-	-
1/2	15	21.3	1.65	1.65	2.11	2.11	-	-	2.77	2.77	2.77	-	3.73	3.73	3.73	-	-	-	4.78	7.47	-
3/4	20	26.7	1.65	1.65	2.11	2.11	-	-	2.87	2.87	2.87	-	3.91	3.91	3.91	-	-	-	5.56	7.82	-
1	25	33.4	1.65	1.65	2.77	2.77	-	-	3.38	3.38	3.38	-	4.55	4.55	4.55	-	-	-	6.35	9.09	-
1 1/4	32	42.2	1.65	1.65	2.77	2.77	-	-	3.56	3.56	3.56	-	4.85	4.85	4.85	-	-	-	6.35	9.70	-
1 1/2	40	48.3	1.65	1.65	2.77	2.77	-	-	3.68	3.68	3.68	-	5.08	5.08	5.08	-	-	-	7.14	10.15	-
2	50	60.3	1.65	1.65	2.77	2.77	-	-	3.91	3.91	3.91	-	5.54	5.54	5.54	-	-	-	8.74	11.07	-
2 1/2	65	73	2.11	2.11	3.05	3.05	-	-	5.16	5.16	5.16	-	7.01	7.01	7.01	-	-	-	9.53	14.02	-
3	80	88.9	2.11	2.11	3.05	3.05	-	-	5.49	5.49	5.49	-	7.62	7.62	7.62	-	-	-	11.13	15.24	-
3 1/2	90	101.6	2.11	2.11	3.05	3.05	-	-	5.74	5.74	5.74	-	8.08	8.08	8.08	-	-	-	-	-	-
4	100	114.3	2.11	2.11	3.05	3.05	-	-	6.02	6.02	6.02	-	8.56	8.56	8.56	-	11.13	-	13.49	17.12	-
5	125	141.3	2.77	2.77	3.40	3.40	-	-	6.55	6.55	6.55	-	9.53	9.53	9.53	-	12.70	-	15.88	19.05	-
6	150	168.3	2.77	2.77	3.40	3.40	-	-	7.11	7.11	7.11	-	10.97	10.97	10.97	-	14.27	-	18.26	21.95	-
8	200	219.1	2.77	2.77	3.76	3.76	6.35	7.04	8.18	8.18	8.18	10.31	12.70	12.70	12.70	15.09	18.26	20.62	23.01	22.23	-
10	250	273	3.40	3.40	4.19	4.19	6.35	7.80	9.27	9.27	9.27	12.70	12.70	12.70	15.09	18.26	21.44	25.40	28.58	25.40	-
12	300	323.8	3.96	3.96	4.57	4.57	6.35	8.38	9.53	9.53	10.31	14.27	12.70	12.70	17.48	21.44	25.40	28.58	33.32	25.40	-
14	350	355.6	3.96	3.96	4.78	6.35	7.92	9.53	9.53	9.53	11.13	15.09	12.70	12.70	19.05	23.83	27.79	31.75	35.71	-	-
16	400	406.4	4.19	4.19	4.78	6.35	7.92	9.53	9.53	9.53	12.70	16.66	12.70	12.70	21.44	26.19	30.96	36.53	40.49	-	-
18	450	457.2	4.19	4.19	4.78	6.35	7.92	11.13	9.53	9.53	14.27	19.05	12.70	12.70	23.83	29.36	34.93	39.67	45.24	-	-
20	500	508	4.78	4.78	5.54	6.35	9.53	12.70	9.53	9.53	15.09	20.62	12.70	12.70	26.19	32.54	38.10	44.45	50.01	-	-
22	550	559	4.78	4.78	5.54	6.35	9.53	12.70	9.53	9.53	-	22.23	12.70	12.70	28.58	34.93	41.28	47.63	53.98	-	-
24	600	610	5.54	5.54	6.35	6.35	9.53	14.27	9.53	9.53	17.48	24.61	12.70	12.70	30.96	38.89	46.02	52.37	59.54	-	-
26	650	660.4	-	-	-	7.93	12.70	-	9.53	9.53	-	-	12.70	-	-	-	-	-	-	-	-
28	700	711.2	-	-	-	7.93	12.70	15.88	9.53	9.53	-	-	12.70	-	-	-	-	-	-	-	-
30	750	762	6.35	6.35	7.92	7.93	12.70	15.88	9.53	9.53	-	-	12.70	12.70	-	-	-	-	-	-	-
32	800	812.8	-	-	-	7.93	12.70	15.88	9.53	9.53	17.48	-	12.70	-	-	-	-	-	-	-	-
34	850	863.6	-	-	-	7.93	12.70	15.88	9.53	9.53	17.48	-	12.70	-	-	-	-	-	-	-	-
36	900	914.4	-	-	-	7.93	12.70	15.88	9.53	9.53	19.05	-	12.70	-	-	-	-	-	-	-	-
38	950	965.2	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-	-
40	1000	1016	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-	25.40
42	1050	1066.8	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-	25.40
44	1100	1117.6	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-	25.40
46	1150	1168.4	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-	25.40
48	1200	1219.2	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-	-	25.40

Tube Size Chart

Outside	in mm	6.35	12.7	19.05	25.4	31.75	38.1	44.45	50.8	57.15	63.5	69.85	76.2	82.55	88.9	95.25	101.6	
Diameter	in inch	1/4	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/4	3 1/2	3 3/4	4	
Wall Thickness																		
Gauge	mm	inch																
22 SWG	0.711	0.028	0.099	0.21	0.322	0.433	0.544	0.656	0.767	0.878	0.99	1.101						
22 BWG	0.711	0.028	0.099	0.21	0.322	0.433	0.544	0.656	0.767	0.878	0.99	1.101						
21 SWG	0.813	0.032	0.111	0.238	0.366	0.493	0.62	0.748	0.875	1.002	1.13	1.257						
21 BWG	0.813	0.032	0.111	0.238	0.366	0.493	0.62	0.748	0.875	1.002	1.13	1.257						
20 SWG	0.914	0.036	0.123	0.266	0.409	0.552	0.695	0.838	0.981	1.124	1.268	1.411	1.554					
20 BWG	0.889	0.035	0.12	0.259	0.398	0.537	0.677	0.816	0.955	1.094	1.233	1.373	1.512					
19 SWG	1.016	0.04	0.134	0.293	0.452	0.611	0.77	0.929	1.088	1.247	1.406	1.566	1.725					
19 BWG	1.067	0.042	0.139	0.306	0.473	0.64	0.807	0.974	1.142	1.309	1.476	1.643	1.81					
18 SWG	1.219	0.048	0.154	0.345	0.536	0.727	0.918	1.109	1.3	1.491	1.681	1.872	2.063	2.254	2.445	2.636	2.827	
18 BWG	1.245	0.049	0.157	0.352	0.547	0.742	0.937	1.132	1.327	1.522	1.716	1.911	2.106	2.301	2.496	2.691	2.886	
17 SWG	1.422	0.056	0.173	0.396	0.618	0.841	1.064	1.286	1.509	1.732	1.954	2.177	2.4	2.622	2.845	3.068	3.29	
17 BWG	1.473	0.058	0.179	0.414	0.649	0.884	1.118	1.353	1.588	1.823	2.057	2.292	2.527	2.762	2.996	3.176	3.466	
16 SWG	1.626	0.064	0.189	0.444	0.699	0.953	1.208	1.463	1.717	1.972	2.226	2.481	2.736	2.99	3.245	3.5	3.754	
16 BWG	1.651	0.065	0.191	0.45	0.708	0.967	1.226	1.484	1.743	2.001	2.26	2.518	2.777	3.035	3.294	3.552	3.811	
15 SWG	1.829	0.072	0.204	0.49	0.777	1.063	1.35	1.636	1.922	2.209	2.495	2.782	3.068	3.355	3.641	3.927	4.214	
15 BWG	1.829	0.072	0.204	0.49	0.777	1.063	1.35	1.636	1.922	2.209	2.495	2.782	3.068	3.355	3.641	3.927	4.214	
14 SWG	2.032	0.08	0.216	0.535	0.853	1.171	1.489	1.807	2.126	2.444	2.762	3.08	3.399	3.717	4.035	4.353	4.671	
14 BWG	2.108	0.083	0.221	0.551	0.881	1.211	1.541	1.871	2.201	2.531	2.861	3.192	3.522	3.852	4.182	4.512	4.842	
13 SWG	2.337	0.092		6.493	0.963	1.329	1.695	2.061	2.427	2.793	3.159	3.525	3.891	4.257	4.623	4.989	5.355	
13 BWG	2.413	0.095		0.612	0.99	1.368	1.746	2.124	2.502	2.879	3.257	3.635	4.013	4.391	4.769	5.147	5.525	
12 SWG	2.642	0.104		0.655	1.069	1.483	1.897	2.31	2.724	3.138	3.552	3.965	4.379	4.793	5.206	5.62	6.034	
12 BWG	2.769	0.109		0.678	1.112	1.545	1.979	2.413	2.846	3.28	3.714	4.147	4.581	5.014	5.448	5.882	6.315	
11 SWG	2.946	0.116		0.709	1.17	1.631	2.093	2.554	3.015	3.477	3.938	4.399	4.861	5.322	5.783	6.245	6.706	
11 BWG	3.048	0.12		0.726	1.203	1.68	2.157	2.635	3.112	3.589	4.067	4.544	5.021	5.499	5.976	6.453	6.931	
10 SWG	3.251	0.128		0.758	1.267	1.776	2.285	2.794	3.303	3.812	4.321	4.83	5.34	5.849	6.358	6.867	7.376	
10 BWG	3.404	0.134		0.78	1.313	1.847	2.38	2.913	3.446	3.979	4.512	5.045	5.578	6.111	6.644	7.177	7.71	
9 SWG	3.658	0.144		0.816	1.389	1.961	2.534	3.107	3.68	4.253	4.826	5.398	5.971	6.544	7.117	7.69	8.263	
9 BWG	3.759	0.148		0.829	1.418	2.006	2.595	3.183	3.772	4.361	4.949	5.538	6.127	6.715	7.304	7.893	8.481	
8 SWG	4.064	0.16		0.866	1.502	2.138	2.775	3.411	4.048	4.684	5.321	5.957	6.593	7.23	7.866	8.503	9.139	
8 BWG	4.191	0.165		0.879	1.536	2.192	2.848	3.505	4.161	4.817	5.474	6.13	6.786	7.443	8.099	8.755	9.412	
7 SWG	4.470	0.176			1.607	2.307	3.007	3.707	4.407	5.107	5.807	6.507	7.207	7.907	8.607	9.307	10.007	
7 BWG	4.572	0.18			1.632	2.348	3.064	3.78	4.496	5.212	5.928	6.644	7.36	8.076	8.792	9.508	10.224	
6 SWG	4.877	0.192			1.705	2.468	3.232	3.996	4.76	5.523	6.287	7.051	7.815	8.578	9.342	10.106	10.87	
6 BWG	5.156	0.202			1.767	2.574	3.382	4.189	4.996	5.804	6.611	7.419	8.226	9.034	9.841	10.648	11.456	
5 SWG	5.385	0.212			1.815	2.658	3.501	4.345	5.188	6.031	6.875	7.718	8.561	9.404	10.248	11.091	11.934	
5 BWG	5.588	0.22			1.855	2.73	3.605	4.48	5.356	6.231	7.106	7.981	8.856	9.731	10.606	11.481	12.356	
4 SWG	5.893	0.232			1.912	2.835	3.758	4.681	5.603	6.526	7.449	8.372	9.295	10.218	11.141	12.063	12.986	
4 BWG	6.045	0.238			1.939	2.885	3.832	4.779	5.725	6.672	7.619	8.565	9.512	10.459	11.405	12.352	13.299	
3 SWG	6.401	0.252			1.997	2.999	4.002	5.004	6.006	7.009	8.011	9.014	10.016	11.018	12.021	13.023	14.026	
3 BWG	6.579	0.259			2.023	3.054	4.084	5.114	6.144	7.175	8.205	9.235	10.266	11.296	12.326	13.356	14.387	
2 SWG	7.010	0.276				3.179	4.277	5.375	6.473	7.57	8.668	9.766	10.864	11.961	13.059	14.157	15.255	
2 BWG	7.214	0.284				3.235	4.365	5.495	6.625	7.754	8.884	10.014	11.143	12.273	13.403	14.533	15.662	
1 SWG	7.620	0.3				3.341	4.535	5.728	6.921	8.114	9.308	10.501	11.694	12.888	14.081	15.274	16.467	
1 BWG	7.620	0.3				3.341	4.535	5.728	6.921	8.114	9.308	10.501	11.694	12.888	14.081	15.274	16.467	
0 SWG	8.229	0.324				3.485	4.773	6.062	7.351	8.639	9.928	11.217	12.505	13.794	15.083	16.371	17.66	
0 BWG	8.636	0.34				3.57	4.923	6.275	7.628	8.98	10.332	11.685	13.037	14.39	15.742	17.094	18.447	

Weight in kg/meter

Specifications

ASTM Specification Stainless Steel Pipes

A312/A312M	Specification for Seamless and Welded Austenitic Stainless Steel Pipe
A333 /A333M	Specification for Seamless and Welded Steel Pipe for Low-Temperature Service
A358/A358M	Specification for Electric-Fusion-Welded Austenitic Chromium-Nickel Alloy Steel Pipe for High-Temperature Service
A530/A530M	Specification for General Requirements for Specialized Carbon and Alloy Steel Pipe
A790/A790M	Specification for Seamless and Welded Ferritic/Austenitic Stainless Steel Pipe
A928/A928M	Specification for Ferritic/Austenitic (Duplex) Stainless Steel Pipe Electric Fusion Welded with Addition of Filler Metal
A999M	Specification for General Requirements for Alloy and Stainless Steel Pipe

ASTM Specification Stainless Steel Tubes

A213/A213M	Specification for Seamless Ferritic and Austenitic Alloy-Steel Boiler, Super heater, and Heat-Exchanger Tubes
A249/A249M	Specification for Welded Austenitic Steel Boiler, Superheater, Heat-Exchanger, and Condenser Tubes
A268/A268M	Specification for Seamless and Welded Ferritic and Martensitic Stainless Steel Tubing for General Service
A269	Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service
A270	Specification for Seamless and Welded Austenitic Stainless Steel Sanitary Tubing
A334/A334M	Specification for Seamless and Welded Carbon and Alloy-Steel Tubes for Low-Temperature Service
A450/A450M	Specification for General Requirements for Carbon, Ferritic Alloy, and Austenitic Alloy Steel Tubes
A688/A688M	Specification for Welded Austenitic Stainless Steel Feed water Heater Tubes
A778 - A778	Specification for Welded, Un annealed Austenitic Stainless Steel Tubular Products
A789/A789M	Specification for Seamless and Welded Ferritic/Austenitic Stainless Steel Tubing for General Service
A 1016	Standard Specification for General Requirements for Ferritic Alloy Steel, Austenitic Alloy Steel, and Stainless Steel Tubes

ASTM Specification Mechanical Tubing

A511	Specification for Seamless Stainless Steel Mechanical Tubing
A554	Specification for Welded Stainless Steel Mechanical Tubing

EN Standards

DIN EN 10216-5	Seamless steel tubes for pressure purposes
DIN EN 10217-7	Welded steel tubes for pressure purposes
DIN EN 10297-2	Seamless Steel tubes for Mechanical and General engineering purpose
DIN EN 10305-1	Steel tubes for precision application

German Standards

DIN 11850	Stainless Steel Tubes for Food and Chemical Industries
DIN 17455	General purpose welded circular stainless steel tubes.
DIN 17456	General purpose Seamless circular stainless steel tubes.
DIN 17457	Welded Circular austenitic stainless tubes subject to special requirement
DIN 17458	Seamless Circular austenitic stainless tubes subject to special requirement
DIN 28180	Seamless Steel tubes for Heat Exchanger
DIN 11850	Welded Tubes and Pipes for food, beverages, chemical & pharmaceuticals industry

Russian Standards

GOST 9941	Seamless and Warm-Deformed Tubes made from corrosion-resistant steel
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Tolerance Chart

	ALLOWABLE OUTSIDE DIAMETER TOLERANCE IN mm	ALLOWABLE WALL THICKNESS TOLERANCES
ASTM A-270/A1016 (Seamless and Welded Austenitic and Ferritic/ Austenitic Stainless Steel Sanitary Tubing)		
OUTSIDE DIAMETER (mm)		
[25] and under	+0.13, -0.13	+12.5%, -12.5%
Over [25] to 2 [50]	+0.20, -0.20	+12.5%, -12.5%
Over [50] to 3 [75]	+0.25, -0.25	+12.5%, -12.5%
Over 3 [75] to 4 [100]	+0.38, -0.38	+12.5%, -12.5%
[100] to 5.1/2 [140], excl.	+0.38, -0.38	+12.5%, -12.5%
[140] to 8 [200], excl.	+0.75, -0.75	+12.5%, -12.5%
8 [200] to 12 [300]	+1.25, -1.25	+12.5%, -12.5%

	ALLOWABLE OUTSIDE DIAMETER TOLERANCE IN mm	ALLOWABLE WALL THICKNESS TOLERANCES
ASTM A-249/A1016 (Welded, Austenitic Steel Boiler, Superheater, Heat-Exchanger and Condenser Tubes)		
Under 1 [25]	+0.1, -0.11	+10.0%, -10.0%
1 to 1.1/2 [25 to 40], incl	+0.15, -0.15	+10.0%, -10.0%
Over 1.1/2 to 2 [40 to 50], excl	+0.2, -0.20	+10.0%, -10.0%
2 to 2.1/2 [50 to 65], excl	+0.25, -0.25	+10.0%, -10.0%
2.1/2 to 3 [65 to 75], excl	+0.30, -0.30	+10.0%, -10.0%
3 to 4 [75 to 100], incl	+0.38, -0.38	+10.0%, -10.0%
Over 4 to 7.1/2 [100 to 200], incl	+0.38, -0.64	+10.0%, -10.0%
Over 7.1/2 to 9 [200 to 225], incl	+0.38, -1.14	+10.0%, -10.0%

	ALLOWABLE OUTSIDE DIAMETER TOLERANCE IN mm	ALLOWABLE WALL THICKNESS TOLERANCES
ASTM A-312/A999 (Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes)		
1/8-1.1/2, incl	+0.40, -0.40	--
Over 1.1/2 to 4, incl	+0.80, -0.80	--
Over 4 to 8, incl	+1.60, -0.80	--
Over 8 to 18, incl	+2.40, -0.80	--
Over 18 to 26, incl	+3.20, -0.80	--
Over 26 to 34, incl	+4.0, -0.80	--
Over 34 to 48, incl	+4.80, -0.80	--
"1/8 to 2.1/2 incl., all t/D ratios"	--	+20.0, -12.5%
"3 to 18 incl., t/D up to 5 % incl."	--	+22.5, -12.5%
3 to 18 incl., t/D > 5%	--	+15.0, -12.5%
"20 and larger, welded, all t/D ratios"	--	+17.5, -12.5%
20 and larger, seamless, t/D up to 5 % incl.	--	+22.5, -12.5%
"20 and larger, seamless, t/D > 5 %"	--	+15.0, -12.5%

	ALLOWABLE OUTSIDE DIAMETER TOLERANCE IN mm	ALLOWABLE WALL THICKNESS TOLERANCES
ASTM A-269 /A 1016 (Seamless and Welded Austenitic Stainless Steel Tubing for General Service)		
Up to 1/2 [13]	+0.13, -0.13	+15.0%, -15.0%
"1/2 to 1.1/2 [13 to 38], excl"	+0.13, -0.13	+10.0%, -10.0%
"1.1/2 to 3.1/2 [38 to 89], excl"	+0.25, -0.25	+10.0%, -10.0%
"3.1/2 to 5.1/2 [89 to 140], excl"	+0.38, -0.38	+10.0%, -10.0%
"5.1/2 to 8 [140 to 203], excl"	+0.76, -0.76	+10.0%, -10.0%
"8 to 12 [203 to 305], excl"	+1.01, -1.01	+10.0%, -10.0%
"12 to 14 [305 to 356], excl"	+1.26, -1.26	+10.0%, -10.0%

	ALLOWABLE OUTSIDE DIAMETER TOLERANCE IN mm	ALLOWABLE WALL THICKNESS TOLERANCES
ASTM A-213/A1016 (Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes)		
Under 1 [25]	+0.10, -0.11	+20%, -0.0%
1 to 1.1/2 [25 to 40], incl	+0.15, -0.15	+20%, -0.0%
Over 1.1/2 to 2 [40 to 50], excl	+0.20, -0.20	+22%, -0.0%
2 to 2.1/2 [50 to 65], excl	+0.25, -0.25	+22%, -0.0%
2.1/2 to 3 [65 to 75], excl	+0.30, -0.30	+22%, -0.0%
3 to 4 [75 to 100], incl	+0.38, -0.38	+22%, -0.0%
Over 4 to 7.1/2 [100 to 200], incl	+0.38, -0.64	+22%, -0.0%
Over 7.1/2 to 9 [200 to 225], incl	+0.38, -1.14	+22%, -0.0%

Permissible variations from the specified average wall thickness shall be ±10 % of the specified average wall thickness for cold formed tubes

	ALLOWABLE OUTSIDE DIAMETER TOLERANCE IN mm	ALLOWABLE WALL THICKNESS TOLERANCES
ASTM A-268/A1016 (Seamless and Welded Ferritic and Martensitic Stainless Steel Tubing for General Service)		
Up to 1/2 [12.7], excl	+0.13,-0.13	+15.0%, -15.0%
1/2 to 1.1/2 [12.7 to 38.1], excl	+0.13,-0.13	+10.0%, -10.0%
1.1/2 to 3.1/2 [38.1 to 88.9], excl	+0.25,-0.25	+10.0%, -10.0%
3.1/2 to 5.1/2 [88.9 to 139.7], excl"	+0.38,-0.38	+10.0%, -10.0%
"5.1/2 to 8 [139.7 to 203.2], incl"	+0.76,-0.38	+10.0%, -10.0%

	ALLOWABLE OUTSIDE DIAMETER TOLERANCE	ALLOWABLE WALL THICKNESS TOLERANCES
ASTM A358/A999/A928 (Welded, LSAW Austenitic and Duplex pipes for High Temperature Service)		
All Sizes	+0.5, -0.5%	+NSF, 0.3mm

DIN STANDARD- For Welded tube, DIN 17457: the tolerances on OD and wall thickness is given in DIN 2463 or EN 10217-7 (See below table)

OUTSIDE DIAMETER D (mm)	Tolerance on Outside Diameter D		Tolerances on Wall Thickness T	
	Tolerance Class	Permissible Deviation		
D ≤ 168.30	D3	+ 0.75 % or + 0.3 mm Whichever is greater	T3	+ 10 % or + 0.2 mm Whichever is greater
	D4	+ 0.5 % or + 0.1 mm Whichever is greater		
D > 168.30	D2	+ 1.0 %		

DIN STANDARD- For Seamless tube, DIN 17456/17458: the tolerances on OD and wall thickness is given in EN 1127(See below table)

Tolerance Class	Tolerance on Outside Diameter D	Tolerance Class	Tolerances on Wall Thickness T
D1	+ 1.5 % with + 0.75mm min.	T1	+ 15 % with + 0.6 mm min.
D2	+ 1.0 % with + 0.50mm min.	T2	+ 12.5 % with + 0.4 mm min.
D3	+ 0.75 % with + 0.3mm min.	T3	+ 10 % with + 0.2 mm min.
D4	+ 0.5 % with + 0.10mm min.	T4	+ 7.5 % with + 0.15 mm min.

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