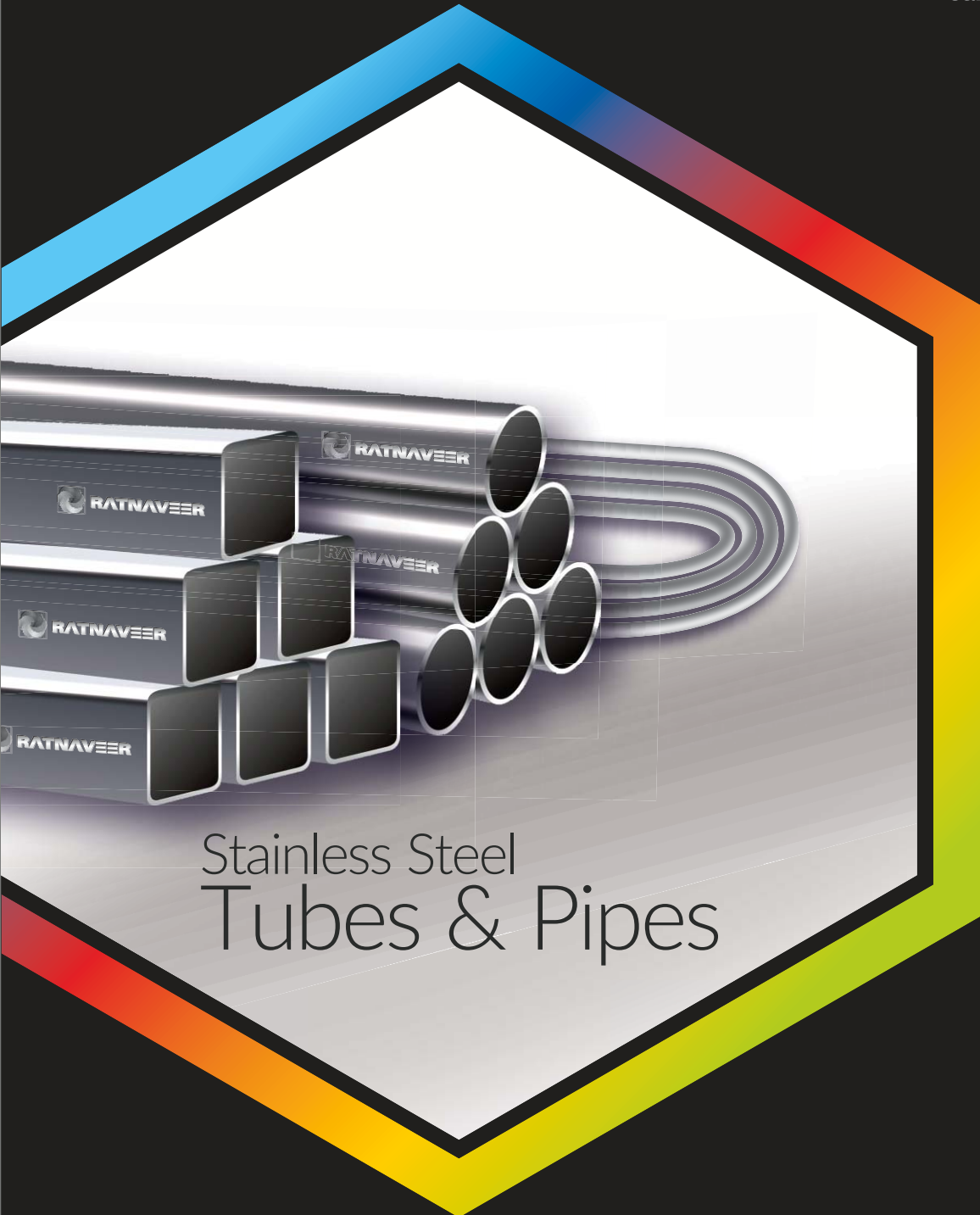




RATNAVEER

Stainless Products Pvt. Ltd.



Stainless Steel
Tubes & Pipes

Building Trust Through Precision

We are a distinguished manufacturers & tubular solution providers of innovative Stainless Steel Tubes & Pipes, providing high end value added professional service to clients across diverse industries.


We have State of the art infrastructure having 50,000 sq. ft area for manufacturing operations. Our current manufacturing capacity is 6000 metric tons of Stainless steel Tubes & Pipes. We are in state of lateral expansion to provide unique solution to several vertical industrial segments. "Our plant is located at the Industrial area of Manjusar-Salvi in district Vadodara in the state of Gujarat, India. " Vadodara City is on the major Air, Rail & Road arteries joining Mumbai, Delhi & all important business places. Simultaneously, it has very good connectivity with the international Ports.


With infusion of technical skills, process focus and commitment to long term Client relationships, we successfully entered in the domestic architectural sector. The solution include a comprehensive and diverse product mix aimed at the architecture, building and construction segments encompassing manufacturing.


The vision of the Company is "Leadership Excellence". This is made possible through adherence to industry standards & quality norms, modern manufacturing and innovative techniques, the mission of the company is to deliver solution based products with unique expertise superceding Client's expectations.

We constantly innovate and strive towards impeccability in quality, product, workmanship, Safety culture, utilizing the latest technology and industry savvy professionals to provide outstanding aesthetics with due Customer care and satisfaction.

Product Range of Stainless Steel Tubes & Pipes

 We manufacture Stainless Steel Welded & Seamless Tubes & Pipes of various Grades, i. e. Austenitic, Martensitic, Ferritic, Duplex & Super Duplex etc.

 **Standards:** ASTM, ASME, DIN, ISO, JIS, EN and other equivalent standards

 **Length:** Upto 12 Meter Long, Typically Fixed Length, Single Random Length (5-7 Meters), Double Random Length (10-12 Meters)



Stainless Steel Pipes

Outer Diameter	: 1/8" NB to 8" NB (10.3 mm to 219.1 mm)
Wall Thickness	: SCH 5S, 10S, 20S, 40S & 80S

Stainless Steel Tubes

Outer Diameter	: 6.35 mm to 101.6 mm
Wall Thickness	: 0.5 mm to 6.0 mm

Stainless Steel Square & Rectangle Sections

Size	: 12x12 mm to 80x80 mm & 30x20 mm to 120x60 mm
Wall Thickness	: 0.5 mm to 6.0 mm

Stainless Steel 'U' Tubes

Outer Diameter	: 12.7 mm to 50.8 mm OD
Wall Thickness	: Upto 3.38 mm
Centre Line Radius	: 22.2 mm to 1220 mm
Leg length	: 10 Meter

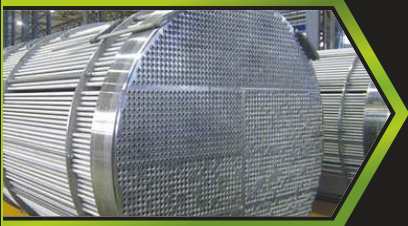
We Manufacture & supply special sizes, grades & Polished Tubes & sections as per customer requirements.

Major Applications



Process Flow Chart

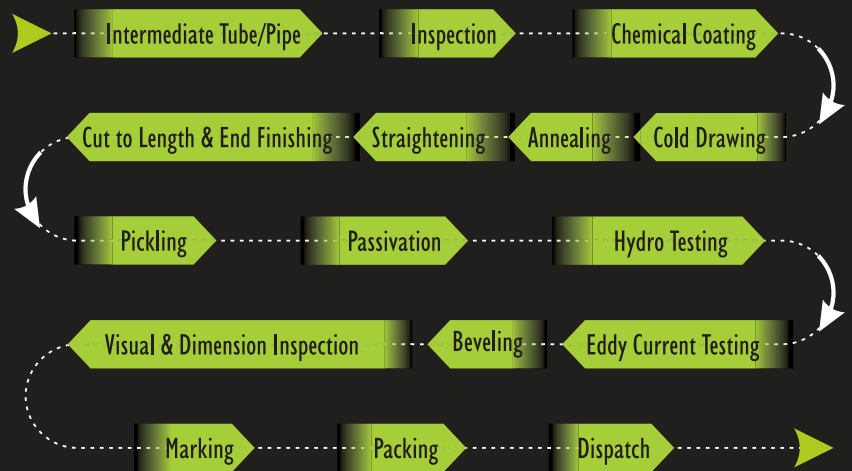
- Heat exchanger and Condensors
- Pressure Vessels
- Oil & Gas industry
- Power Plants
- Environmental & Effluent treatment
- Solvent Extractions
- Petrochemicals & Refineries
- Submersible pumps
- Pharmaceuticals
- Sanitary & Plumbing
- Chemical Plants
- Railway Coaches
- Fertilizer Plants
- Automobiles industry
- Instrumentation
- Furniture industry
- Economizer
- Sugar Mills
- Architectural Applications
- Decorative Purposes
- Dairy and food industry
- Paper industry



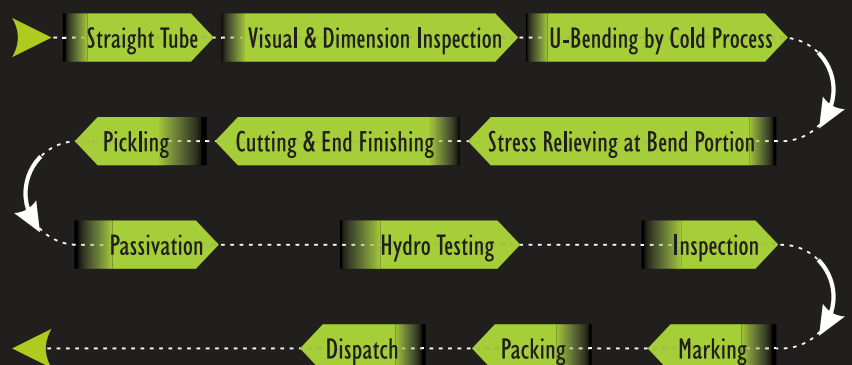
Welded Tubes & Pipes



Cold Drawn Tubes & Pipes



U Tubes



There are well defined Quality & Traceability Procedures and Lean Manufacturing practices to ensure smooth process flow & On Time Delivery.



Stainless Steel Pipe Dimensions & Weights

Nominal Pipe Size		Outside Diameter	SCH 5S		SCH 10S		SCH 20S		SCH 40S		SCH 80S	
DN	Inch	mm	WT(mm)	kg/mtr.	WT(mm)	kg/mtr.	WT(mm)	kg/mtr.	WT(mm)	kg/mtr.	WT(mm)	kg/mtr.
6	1/8	10.29	0.89	0.23	1.24	0.28	1.50	0.33	1.73	0.37	2.41	0.47
8	1/4	13.72	1.24	0.39	1.65	0.50	2.00	0.59	2.24	0.64	3.02	0.81
10	3/8	17.15	1.24	0.49	1.65	0.64	2.00	0.76	2.31	0.86	3.20	1.12
15	1/2	21.34	1.65	0.81	2.11	1.01	2.50	1.18	2.77	1.29	3.73	1.64
20	3/4	26.67	1.65	1.03	2.11	1.30	2.50	1.51	2.87	1.71	3.91	2.22
25	1	33.40	1.65	1.31	2.77	2.12	3.00	2.28	3.38	2.54	4.55	3.28
32	1 1/4	42.16	1.65	1.67	2.77	2.73	3.00	2.94	3.56	3.44	4.85	4.52
40	1 1/2	48.26	1.65	1.92	2.77	3.15	3.00	3.39	3.68	4.10	5.08	5.48
50	2	60.33	1.65	2.42	2.77	3.99	3.50	4.97	3.91	5.52	5.54	7.59
65	2 1/2	73.03	2.11	3.74	3.05	5.34	3.50	6.08	5.16	8.76	7.01	11.57
80	3	88.90	2.11	4.58	3.05	6.55	4.00	8.49	5.49	11.45	7.62	15.48
100	4	114.30	2.11	5.92	3.05	8.48	4.50	12.35	6.02	16.30	8.56	22.63
125	5	141.30	2.77	9.59	3.40	11.72	5.00	17.04	6.55	22.07	9.52	31.36
150	6	168.28	2.77	11.46	3.40	14.01	5.50	22.38	7.11	28.65	10.97	43.14
200	8	219.08	2.77	14.98	3.76	20.24	6.35	33.77	8.18	43.13	12.70	65.53



Stainless Steel Tube Dimensions & Weights

Wall Thickness in mm	0.5	0.7	0.9	1.0	1.2	1.5	1.6	2.0	2.6	3.0	3.2	3.6
OD in mm	kg/mtr.											
6.35	0.07	0.10	0.12	0.13	0.15	0.18	0.19	-	-	-	-	-
9.52	0.11	0.15	0.19	0.21	0.25	0.30	0.32	-	-	-	-	-
12.70	0.15	0.21	0.27	0.29	0.35	0.42	0.44	-	-	-	-	-
14.00	0.17	0.23	0.29	0.33	0.38	0.47	0.50	-	-	-	-	-
15.87	0.19	0.27	0.34	0.37	0.44	0.54	0.57	0.69	-	-	-	-
19.00	0.23	0.32	0.41	0.45	0.53	0.66	0.70	0.85	-	-	-	-
19.05	0.23	0.32	0.41	0.45	0.54	0.66	0.70	0.85	1.07	-	-	-
25.00	0.31	0.43	0.54	0.60	0.71	0.88	0.94	1.15	1.46	-	-	-
25.40	0.31	0.43	0.55	0.61	0.73	0.90	0.95	1.17	1.48	1.68	1.78	-
31.75	-	-	0.69	0.77	0.92	1.13	1.21	1.49	1.89	2.16	2.28	-
38.10	-	-	0.84	0.93	1.11	1.37	1.46	1.81	2.31	2.63	2.79	3.11
44.50	-	-	-	-	1.30	1.61	1.72	2.13	2.72	3.11	3.30	3.68
50.80	-	-	-	-	1.49	1.85	1.97	2.44	3.13	3.59	3.81	4.25
63.50	-	-	-	-	-	2.33	2.48	3.08	3.96	4.54	4.82	5.39
76.20	-	-	-	-	-	2.80	2.98	3.71	4.78	5.49	5.84	6.53
88.90	-	-	-	-	-	-	3.49	4.35	5.61	6.44	6.86	7.68
101.60	-	-	-	-	-	-	4.00	4.98	6.44	7.40	7.87	8.82



Stainless Steel Square Section Dimensions & Weights

Wall Thickness in mm	0.9	1.0	1.2	1.5	1.6	2.0	2.6	3.0	3.2	3.6	4.0	4.5
OD in mm	kg/mtr.											
15 x 15	0.41	0.45	0.54	0.66	0.70	0.85	1.07	-	-	-	-	-
20 x 20	0.55	0.61	0.73	0.90	0.95	1.17	1.48	-	-	-	-	-
25 x 25	0.69	0.77	0.92	1.13	1.21	1.49	1.89	2.16	2.28	-	-	-
30 x 30	0.84	0.93	1.11	1.37	1.46	1.81	2.31	2.63	2.79	3.11	3.41	3.78
35 x 35	-	-	1.30	1.61	1.72	2.13	2.72	3.11	3.30	3.68	4.05	4.50
40 x 40	-	-	1.49	1.85	1.97	2.44	3.13	3.59	3.81	4.25	4.68	5.21
50 x 50	-	-	-	-	2.48	3.08	3.96	4.54	4.82	5.39	5.95	6.64
60 x 60	-	-	-	-	2.98	3.71	4.78	5.49	5.84	6.53	7.22	8.07
70 x 70	-	-	-	-	-	4.35	5.61	6.44	6.86	7.68	8.49	9.50
80 x 80	-	-	-	-	-	4.98	6.44	7.40	7.87	8.82	9.76	10.92



Stainless Steel Rectangle Section Dimensions & Weights

Wall Thickness in mm	0.9	1.0	1.2	1.5	1.6	2.0	2.6	3.0	3.2	3.6	4.0	4.5
OD in mm	kg/mtr.											
30 x 20	0.69	0.77	0.92	1.13	1.21	1.49	1.89	2.16	-	-	-	-
40 x 20	0.84	0.93	1.11	1.37	1.46	1.81	2.31	2.63	-	-	-	-
50 x 30	-	-	1.49	1.85	1.97	2.44	3.13	3.59	3.81	4.25	-	-
60 x 20	-	-	1.49	1.85	1.97	2.44	3.13	3.59	3.81	4.25	4.68	5.21
75 x 25	-	-	-	2.33	2.48	3.08	3.96	4.54	4.82	5.39	5.95	6.64
60 x 40	-	-	-	2.33	2.48	3.08	3.96	4.54	4.82	5.39	5.95	6.64
70 x 30	-	-	-	2.33	2.48	3.08	3.96	4.54	4.82	5.39	5.95	6.64
80 x 40	-	-	-	2.80	2.98	3.71	4.78	5.49	5.84	6.53	7.22	8.07
70 x 50	-	-	-	2.80	2.98	3.71	4.78	5.49	5.84	6.53	7.22	8.07
90 x 30	-	-	-	2.80	2.98	3.71	4.78	5.49	5.84	6.53	7.22	8.07
80 x 60	-	-	-	-	-	4.35	5.61	6.44	6.86	7.68	8.49	9.50
100 x 60	-	-	-	-	-	4.98	6.44	7.40	7.87	8.82	9.76	10.92
120 x 60	-	-	-	-	-	5.62	7.26	8.35	8.89	9.96	11.03	12.35



ASTM Specifications-Stainless Steel Tubes & Pipes

Specification	Allowable Outside Diameter Variation in mm			Allowable Thickness Variation in %		Exact Length Tolerance		Testing
	Outside Diameter	Over mm	Under mm	% Over	% Under	Over	Under	
ASTM A 213- Seamless Boiler Super Heater and Heat Exchanger Tubes	Under 25 mm	0.10	0.11	Under 38.1 mm OD--- 20% & Over 38.1 mm OD--- 22%	0.0	Under 50.8 mm OD---3 mm & Over 50.8 mm OD---5 mm	0	Flattening test
	25 to 40 mm incl.	0.15	0.15		0.0		0	Flaring test
	40 to 50 mm excl.	0.20	0.20		0.0		0	Hardness test
	50 to 65 mm excl.	0.25	0.25		0.0		0	Tension test
	65 to 75 mm excl.	0.30	0.30		0.0		0	100% Hydrostatic test Referred ASTM A 1016
	75 to 100 mm incl.	0.38	0.38		0.0		0	
ASTM A 249- Welded Super Heater and Heat Exchanger and Condenser Tubes	Under 25 mm	0.10	0.11	10.0	10.0	Under 50.8 mm OD --- 3 mm & Over 50.8 mm OD ---5 mm	0	Flattening test
	25 to 40 mm incl.	0.15	0.15	10.0	10.0		0	Flange test
	40 to 50 mm excl.	0.20	0.20	10.0	10.0		0	Reverse bend test
	50 to 65 mm excl.	0.25	0.25	10.0	10.0		0	Hardness test
	65 to 75 mm excl.	0.30	0.30	10.0	10.0		0	Tension test
	75 to 100 mm incl.	0.38	0.38	10.0	10.0		0	100% Hydrostatic test Referred to ASTM A 1016
	100 to 200 mm incl.	0.38	0.64	10.0	10.0		0	
	200 to 225 mm incl.	0.38	1.14	10.0	10.0		0	
ASTM A 268 - Seamless & Welded Ferritic & Martensitic Stainless Steel Tubing for General Service	Up to 12.7 mm excl.	0.13	0.13	15.0	15.0	3	0	Flange test
	12.7 to 38.1 mm excl.	0.13	0.13	10.0	10.0	3	0	Hardness test
	38.1 to 88.9 mm excl.	0.25	0.25	10.0	10.0	5	0	Tension test
	88.9 to 139.7 mm excl.	0.38	0.38	10.0	10.0	5	0	Reverse Flattening test
	139.7 to 203.2 mm excl.	0.76	0.76	10.0	10.0	5	0	100% Hydrostatic test
ASTM A 269 - Seamless & Welded Stainless Steel Tubing for General Service	Up to 12.7 mm	0.13	0.13	15.0	15.0	3.2	0	Flange test
	12.7 to 38.1 mm incl.	0.13	0.13	10.0	10.0	3.2	0	Hardness test
	38.1 to 76.2 mm excl.	0.25	0.25	10.0	10.0	4.8	0	Tension test
	76.2 to 139.7 mm excl.	0.38	0.38	10.0	10.0	4.8	0	Reverse Flattening test
	139.7 to 203.2 mm excl.	0.76	0.76	10.0	10.0	4.8	0	100% Hydrostatic test Referred to ASTM A 1016
	203.2 to 304.8 mm incl.	1.01	1.01	10.0	10.0	4.8	0	
ASTM A 270 - Seamless & Welded Stainless Steel Sanitary Tubing	304.8 to 355.6 mm incl.	1.26	1.26	10.0	10.0	4.8	0	
	Under 25.4 mm	0.13	0.13	12.5	12.5	3.2	0	Reverse Flattening test
	25.4 to 50.8 mm incl.	0.20	0.20	12.5	12.5	3.2	0	100% Hydrostatic test Referred to ASTM A 1016
	50.8 to 76.2 mm excl.	0.25	0.25	12.5	12.5	3.2	0	
	76.2 to 101.6 mm excl.	0.38	0.38	12.5	12.5	3.2	0	
	101.6 to 139.7 mm excl.	0.38	0.38	12.5	12.5	4.8	0	
139.7 to 203.2 mm incl.	0.76	0.76	12.5	12.5	4.8	0		
ASTM A 312 - Seamless & Welded Heavily Cold Worked Austenitic Stainless Steel Pipes	203.2 to 304.8 mm incl.	1.27	1.27	12.5	12.5	4.8	0	
	1/8"NB to 1.5"NB incl.	0.40	0.80	20.0	12.5	For Random Length- 15 ft to 24 ft and For Fix Length- -0/+ 6 mm	0	Tension test
	1.5"NB to 4"NB incl.	0.80	0.80	22.5	12.5		0	Flattening test
	4"NB to 8"NB incl.	1.60	0.80	15.0	12.5		0	100% Hydrostatic test Referred to ASTM A 999
	8"NB to 18"NB incl.	2.40	0.80	17.5	12.5		0	
	18"NB to 26"NB incl.	3.20	0.80	22.5	12.5		0	
	26"NB to 34"NB incl.	4.00	0.80	15.0	12.5		0	
34"NB to 48"NB incl.	4.80	0.80	-	-	0			
ASTM A 789 - Seamless & Welded Ferritic & Austenitic Stainless Steel Tubing for General Service	Up to 12.7 mm excl.	0.13	0.13	15.0	15.0	3	0	Flange test
	12.7 to 38.1 mm excl.	0.13	0.13	10.0	10.0	3	0	Hardness test
	38.1 to 88.9 mm excl.	0.25	0.25	10.0	10.0	5	0	Tension test
	88.9 to 139.7 mm excl.	0.38	0.38	10.0	10.0	5	0	Reverse Flattening test
	139.7 to 203.2 mm excl.	0.76	0.76	10.0	10.0	5	0	100% Hydrostatic test
ASTM A 790 - Seamless & Welded Ferritic & Austenitic Stainless Steel Pipes	Up to 12.7 mm excl.	0.13	0.13	15.0	15.0	For Random Length- 15 ft to 24 ft and For Fix Length- -0/+ 6 mm	0	Flange test
	12.7 to 38.1 mm excl.	0.13	0.13	10.0	10.0		0	Hardness test
	38.1 to 88.9 mm excl.	0.25	0.25	10.0	10.0		0	Tension test
	88.9 to 139.7 mm excl.	0.38	0.38	10.0	10.0		0	100% Hydrostatic test Referred to ASTM A 999
	139.7 to 203.2 mm excl.	0.76	0.76	10.0	10.0		0	
	1/8"NB to 1.5"NB incl.	0.40	0.80	20.0	12.5		0	
	1.5"NB to 4"NB incl.	0.80	0.80	22.5	12.5		0	



Quality Assurance Plan

A. Incoming Raw Material

Sr. No.	Process Description	Ref. Documents/ Standards	Characteristic to be checked	Sample Quorum of size/Inspection	Instrument & Equipment used for testing	Acceptance Criteria
01	S. S. Coil & Seamless Hollow	Purchase Order/Specification	<ul style="list-style-type: none"> ▶ Dimension ▶ T.C. Verification (Lab test report) ▶ Weight ▶ Surface defects 	Sample/Heat	Micrometer, Vernier Chemical analysis Tensile Testing m/c Hardness Testing m/c	100% confirm to Specification

B. Stage wise Inspection

02	Tube Forming & Welding	As per Work Order/Specification	<ul style="list-style-type: none"> ▶ Dimensions-Diameter (Ovality), Thickness & Length ▶ Weld test-Flare, Flange, Reverse bending & Flattening ▶ Surface defects 	One sample from each lot	Micrometer, Vernier, Measuring Tape, UTM-40T Microscope	Dimesions acceptance as per order confirm to standard Specification
03	Oxalate Coating & Soaping	As per work Order/Specification	▶ Concentration Temperature	One test/Bath	Chemical Laboratory	Confirm to requirement
04	Cold Drawing	As per Work Order/Specification	<ul style="list-style-type: none"> ▶ Dimensions-Diameter (Ovality), Thickness & Length ▶ Surface defects 	One sample from each lot	Micrometer, Vernier Measuring Tape	Dimesions acceptance as per order confirm to standard Specification
05	Annealing	Temperature as per ASTM Standard	<ul style="list-style-type: none"> ▶ Temperature ▶ Hardness ▶ Water Quenching 	One Sample/Lot or One Sample / Heat	Digital Temperature indicator & Temperature Controller, Metallurgical-Microscope, Hardness Tester	Confirm to ASTM Standard/Work instruction of Furnace
06	Straightening	As per Work Order/Specification	Check Straightness of Pipe/Tube	First 2 pipes/Tubes of each Lot	Micrometer, Visual Observation	Straightness as per Specification
07	Cutting	As per Work Order/Specification	Right Angle to Length	First 2 pipes/Tubes of each Lot	Measuring Tape & Mechanical Right Angle	Confirm to Requirement
08	Deburring	Burr Free	Visual Inspection	100%	Mechanical Right Angle & Visual Inspection	Confirm to Requirement
09	Pickling & Passivation	As per Work Order/Standard	Scale free & Proper Cleaning	100%	Light Pass, Cotton Plug & Visual Inspection	Confirm to Requirement
10	Eddy Current Test	Specified in Standard	Surface Defect, Lamination Crack & Dent	100%	ECT m/c	As per Standard
11	Ultrasonic Test	Specified in Standard	Internal Crack	100%	Ultrasonic m/c	As per Standard
12	Hydrostatic Testing	As per Work Order/Standard	Leakages	100%	Visual Inspection	No Leakage
13	Air under water Testing	As per Work Order/Standard	Leakages	100%	Visual Inspection	No Leakage
14	Final Inspection	As per Standard	<ul style="list-style-type: none"> ▶ VDI & ▶ Physical & Chemical Testing 	100% VDI & Physical & Chemical Testing as per Standard	Micrometer, Vernier, Spectroscope, Moly Detector, UTM, Hardness Tester, Impact Tester, PMI, Corrosion Tester	Confirm to Requirement
15	Marking	As per Requirement/ Standard	<ul style="list-style-type: none"> ▶ Spell Check ▶ Details Verification 	First 2 pipes/Tubes of each Lot	Visual Inspection	Confirm to Requirement
16	Packing & Delivery	As per Requirement	Packing Quality & Tightness of Packing	100%	Visual Inspection	Confirm to Requirement

QAP may be finalized as per customer requirement at the time of order acceptance.



Inspection & Testing

Our real strength lies in quality control, we have an exhaustive quality assurance facility to test each & every raw material which enters into factory, inprocess inspection and each & every product before leaves the factory. The company has the latest manufacturing & testing equipments of world class standards & highly qualified and experienced personnel to manage the production & inspection at various level.

Eddy Current Test

Eddy Current Test is conducted as per ASTM specification and ASTM E 426 on entire length of tube. This test detects as well as controls surface and subsurface defects in thin walls.

Ultrasonic Test

Ultrasonic Test is conducted as per ASTM specification on the the entire length of the tube to detect Cracks.

Chemical Analysis

As per ASTM requirement chemical analysis is carried out. We have Spectrometer Molydetector & PMI to perform chemical analysis on the product.

Mechanical Test

- **Tensile Test:** Tensile Test is destructive test carried out to obtain the mechanical test value of finished products.
- **Flattenning Test:** Flattening Test is carried out to check the material under compression.
- **Flange Test:** Flange Test is carried out to check the material under deformation.
- **Reverse Bend Test:** Reverse Bend Test is done to test the welding strength.
- **Hardness Test:** Hardness Tester is used for measuring hardness value of Tubes & Pipes.

Air Under Water Test

Air Under Water Test is conducted at 150 PSI as specified in ASTM specification. It is conducted as per the standards & customer requirements.

Hydro Testing

Hydro Test is conducted as per ASTM A 450 & A 530 or as customer's specification on 100% Tubes & Pipes. It is conducted as per standard and customer requirements.

Micro-structure Analysis

Metallurgical Microscope helps to check the grain structure of Tubes & Pipes after annealing process. We certify Micro-structure Grain Size(As per ASTM E 112). This test ensures that the carbides are dissolved and the corrosion resistance is at its maximum value. The grain size confirms uniformity to property.

Corrosion Test

Corrosion Test is conducted as per ASTM A 262, Practice A,B,C and E. The test ensure that the tube/pipe has adequate corrosion resistance.

Weld Decay Test

As per ASTM A 249 THE Weld Decay Test gives information of the Weld and its rate to dissolution.

Dye Penetrant Test

Dye Penetrant Test is carried out on bend portion to detect cracks, flaws or any type of defects.

Visual & Dimension Inspection

Inspection is carried out to detect any Dents, Surface defects, Scratch on the surface of Pipes/Tubes. The dimensional inspection is carried out with calibrated Measuring Instruments for product dimensions are within tolerance requirements.

Third Party Inspection

We accept all third party inspection like TUV, BVIS, DNV-GL, Veloci, EIL, SGS, LLOYD, H&G, PDIL, UHDE INDIA, TOYO ENGG, LINDE and many others.

In addition to in-house testing facilities, we also outsource for Special/Customer requested Tests in NABL approved laboratory.



Chemical Composition

200 & 300 Series

Grade	Chemical Composition (%)									
AISI/ASTM	Steel No. Equivalent to DIN EN	C (Max)	Mn (Max)	P (Max)	S (Max)	Si (Max)	Cr	Ni	Mo	Other Elements
TP 201	1.4372	0.15	5.5-7.5	0.060	0.030	1.00	16.0-18.0	3.5-5.5	-	N-0.25 Max
TP 202	1.4373	0.15	7.5-10	0.060	0.030	1.00	17.0-19.0	4.0-6.0	-	N-0.25 Max
TP 301	1.4310	0.15	2.00	0.045	0.030	1.00	16.0-18.0	6.0-8.0	-	N-0.25 Max
TP 304	1.4301	0.08	2.00	0.045	0.030	1.00	18.0-20.0	8.0-11.0	-	-
TP 304L	1.4307	0.035	2.00	0.045	0.030	1.00	18.0-20.0	8.0-12.0	-	-
TP 304N	-	0.08	2.00	0.045	0.030	1.00	18.0-20.0	8.0-11.0	-	N - 0.10 - 0.16
TP 304LN	1.4311	0.035	2.00	0.045	0.030	1.00	18.0-20.0	8.0-11.0	-	N - 0.10 - 0.16
TP 308	-	0.08	2.00	0.045	0.030	1.00	19.0-21.0	10.0-12.0	-	-
TP 309	-	0.2	2.00	0.045	0.030	1.00	22.0-24.0	12.0-15.0	-	-
TP 309S	1.4833	0.08	2.00	0.045	0.030	1.00	22.0-24.0	12.0-15.0	-	-
TP 310	-	0.25	2.00	0.045	0.030	1.50	24.0-26.0	19.0-22.0	-	-
TP 310S	1.4845	0.08	2.00	0.045	0.030	1.00	24.0-26.0	19.0-22.0	-	-
TP 316	1.4401	0.08	2.00	0.045	0.030	1.00	16.0-18.0	10.0-14.0	2.00-3.00	-
TP 316L	1.4404	0.035	2.00	0.045	0.030	1.00	16.0-18.0	10.0-14.0	2.00-3.00	-
TP 316N	-	0.08	2.00	0.045	0.030	1.00	16.0-18.0	10.0-13.0	2.00-3.00	N - 0.10 - 0.16
TP 316LN	1.4406	0.035	2.00	0.045	0.030	1.00	16.0-18.0	10.0-13.0	2.00-3.00	N - 0.10 - 0.16
TP 316Ti	1.4571	0.08	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	Ti-5(C+N)-0.7/N-0.10 Max
TP 317	-	0.08	2.00	0.045	0.030	1.00	18.0-20.0	11.0-15.0	3.00-4.00	-
TP 317L	1.4438	0.035	2.00	0.045	0.030	1.00	18.0-20.0	11.0-15.0	3.00-4.00	-
TP 321	1.4541	0.08	2.00	0.045	0.030	1.00	17.0-19.0	9.0-12.0	-	Ti-5(C+N)-0.7
TP 347	1.455	0.08	2.00	0.045	0.030	1.00	17.0-20.0	9.0-13.0	-	Nb - 10XC-1.10
UNS S31254	-	0.02	1.00	0.030	0.010	0.80	19.5-20.5	17.5-18.5	6.00-6.50	N 0.18-0.22 & Cu 0.5-1.0

AUSTENITIC

400 Series

TP 405	-	0.08	1.00	0.040	0.030	1.00	11.5-14.5	0.5	-	Al-0.10-0.30
TP 409	1.4512	0.08	1.00	0.045	0.030	1.00	10.5-11.7	0.5	-	Ti-6 X C Min 0.75 Max
TP 410	1.4006	0.15	1.00	0.040	0.030	1.00	11.5-13.5	-	-	-
TP 429	-	0.12	1.00	0.040	0.030	1.00	14.0-16.0	-	-	-
TP 430	1.4016	0.12	1.00	0.040	0.030	1.00	16.0-18.0	-	-	-
TP 430Ti	1.4510	0.10	1.00	0.040	0.030	1.00	16.0-19.5	0.75	-	Ti-5 X C Min 0.75 Max
TP 439	-	0.07	1.00	0.040	0.030	1.00	17.0-19.0	0-5.0	-	N - 0.04 Max, 0.5Ti-0.20 + 4(€ + N)Min, 1.10 Max

FERRETIC
MARTENSITIC

Duplex & Super Duplex Grades

UNS S 31500	1.4417	0.03	1.20-2.00	0.030	0.030	1.40-2.00	18.0-19.0	4.3-5.2	2.50-3.00	N-0.05-0.10
UNS S 31803	1.4462	0.03	2.00	0.030	0.020	1.00	21.0-23.0	4.5-6.5	2.50-3.50	N-0.08-0.20
UNS S 32205	-	0.03	2.00	0.030	0.020	1.00	22.0-23.0	4.5-6.5	3.00-3.50	N-0.14-0.20
UNS S 32304	1.4362	0.03	2.50	0.040	0.040	1.00	21.5-24.5	3.0-5.5	0.05-0.60	"N-0.05-0.20; Cu-0.05-0.60"
UNS S 32750	1.4410	0.03	1.20	0.035	0.020	0.80	24.0-26.0	6.0-8.0	3.00-5.00	"N-0.24-0.32; Cu-0.5 Max"
UNS S 32760	1.4501	0.05	1.00	0.030	0.010	1.00	24.0-26.0	6.0-8.0	3.00-4.00	"N-0.20-0.30; Cu-0.5-1.0; W-0.5-1.0, %Cr + 3.3% Mo + 16%N = 40 Min"

DUPLEX
SUPERDUPLEX



Physical Properties

Grade	Tensile Strength KSI(MPA)	Yield Strength KSI(MPA)	Elongation in 2 inches %min	Hardness(Max)		Thermal Conductivity Col/Sec.cm ^o c at Temp Range 20-500 °c	Co-efficient of Expansion X 10 ⁻⁶ Cm/cm/ ^o c at Temp Range 20-870 °c
				Brinell(HBW)	Rockwell(HRB)		
TP 301	75(515)	30(205)	35	192	90	0.051	19.8
TP 304	75(515)	30(205)	35	192	90	0.051	19.9
TP 304L	70(485)	25(170)	35	192	90	0.051	19.8
TP 304N	80(550)	35(240)	35	192	90	0.051	19.9
TP 304LN	75(515)	30(205)	35	192	90	0.051	19.8
TP 309	75(515)	30(205)	35	192	90	0.045	19.9
TP 310	75(515)	30(205)	35	192	90	0.044	18.8
TP 316	75(515)	30(205)	35	192	90	0.042	19.3
TP 316L	70(485)	25(170)	35	192	90	0.042	19.3
TP 316Ti	75(515)	30(205)	35	192	90	0.042	19.3
TP 316N	80(550)	35(240)	35	192	90	0.038	19.3
TP 316LN	75(515)	30(205)	35	192	90	0.042	19.3
TP 317L	75(515)	30(205)	35	192	90	0.049	17.5
TP 321	75(515)	30(205)	35	192	90	0.051	19.8
TP 347	75(515)	30(205)	35	192	90	0.053	19.9
TP 405	60(415)	30(205)	20	207	95	0.064	10.8
TP 410	60(415)	30(205)	20	207	95	0.059	9.9
TP 429	60(415)	35(240)	20	190	90	0.061	10.3
TP 430	60(415)	35(240)	20	190	90	0.062	10.5
TP 430Ti	60(415)	35(240)	20	190	90	0.062	10.5
TP 439	60(415)	30(205)	20	190	90	0.057	11.5
UNS S 31803	90(620)	65(450)	25	290	30 HRC	0.041	16.9
UNS S 32205	95(655)	70(485)	25	290	30 HRC	0.041	16.9
UNS S 32750	116(800)	80(550)	15	300	32 HRC	0.040	14.2
UNS S 32760	109(750)	80(550)	25	300	32 HRC	0.035	13.8



Our Credentials

Meeting the ever-changing demands of the market with lot of poise and grandeur, Ratnaveer has been credited with immense repute and glory in the form of various Certificates which are dedicated to the Company's continuous improvement in the processes, products and systems incorporated from time to time.



Customer Satisfaction

Ratnaveer is a Customer-Oriented Company with an extensive product range with acknowledged performance and quality. We try to satisfy Customers requirements with the expected quality along with the developed sales and service department. Ratnaveer ensures adequate technical support combined with the technological sophistication of the products being employed.



Packing

At Ratnaveer, it is not just the product which gets its packaging, but the image of the company as well. The company assures efficient and flawless packaging with enhanced strength and aesthetics.



Labeling

Standard marking and labeling practice as per global standards are being implemented and followed as standard practice. There will be Marking on each Tube/Pipe of its dimensions and our company's logo for the authenticity of our product.



Export House

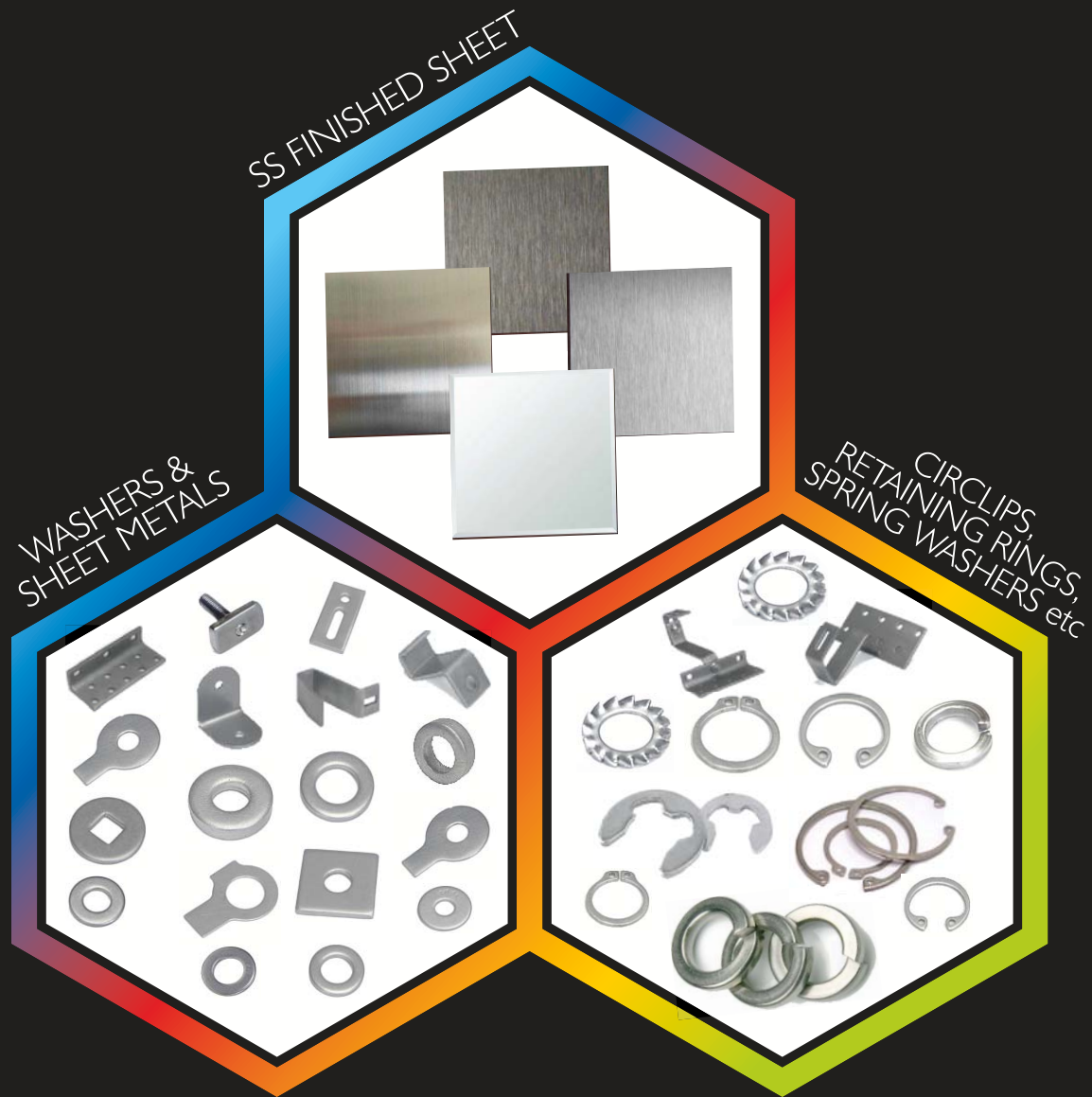
Ratnaveer is a Star Export House since 2003, it is known for achieving targets and goals on time and at par excellence. The company has received various exporting awards since its inception.

Global Presence

As a Global exporting company we are committed to being forefront of technology and innovation. This includes our markets around the world where we continue to expand our international partnerships and broaden our focus to one that is increasing globally. Ratnaveer has a range of Industry - leading capabilities for markets around the world and sell products and services to customers in 25 countries since 15 years.



Group Products



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