RATNAVEER™

STAINLESS STEEL
TUBE & PIPES

Building Trust Through Precision

www.ratnaveer.com

ABOUT US

We are BSE NSE listed organization & distinguished manufacture of Stainless Steel Tubes & Pipes. We provide 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. Our plant is located at the Industrial area of Manjusar-Savli 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 relationship, we have successfully entered the domestic and export markets of various industrial sectors.

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 with due Customer care and satisfaction.

ELECTRO POLISHING ADVANTAGES

Electro polishing is a special process applied for specific hygienic and other important parameters. Where the inside surface condition of the tubes is extremely important. Here the polishing of the tube is done by electrical process. For electro polishing bright annealed tubes are used, as it provides real bright surface finish both inside & outside of the tubes. Mainly these are must for application like dairy, pharmaceuticals, food processing industries etc. where hygienic conditions are most important.

ADVANTAGES OF BRIGHT ANNEALING

Bright annealing is a solution annealing operation performed in neutral controlled atmosphere. It retain their original parent material surface on both inside & outside of the tubes. The heat treatment is performed at 1040 ° C / 1080 ° C depending on the actual chemical composition. The cooling is also done in the neutral atmosphere. These can be directly used for industrial and other applications. Environmentally friendly process. No harmful chemicals used. No scale formation.

PRODUCT RANGE

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 :

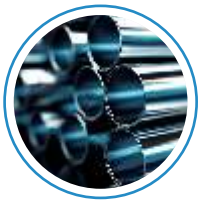
Upto 12 Meter Long. Typically Fixed Length, Single Random Length (5-7 Meters), Double Random Length (10-12 Meters)

Electro Polished Tubes :

Tubes having high surface finish on both inside & outside used for pharmaceuticals, daires, food industries etc.

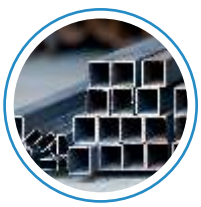
Stainless Steel Pipes

Outer Diameter	:	1/8" NB to 12" NB (10.3 mm to 323.85 mm)
Wall Thickness	:	SCH 5S, 10S, 205, 405 & 805



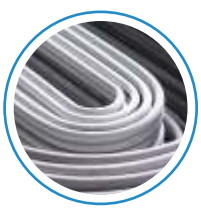
Stainless Steel Tube

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	:	12 Meter

Electro Polished Tubes

Outer Diameter	:	6.35 mm to 50.8 mm
Wall Thickness	:	0.5 mm to 3.0 mm

MAJOR APPLICATIONS

SANITARY TUBES FOR THE DAIRY INDUSTRY

PHARMA & BIOPHARMA : SANITARY TUBES FOR STERILE APPLICATIONS

FOOD & BEVERAGES : SANITARY TUBES FOR HYGIENIC APPLICATIONS

HEALTHCARE & COSMETICS : SANITARY TUBES FOR HYGIENIC APPLICATIONS

❖ 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

OUR VALUABLE CLIENTS

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STAINLESS STEEL PIPE DIMENSIONS & WEIGHTS

NOMINAL PIPE SIZE		Outside Diameter	SCH 5 S		SCH 10 S		SCH 20 S		SCH 40 S		SCH 80 S	
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	11/4	42:16	1.65	1.67	2.77	2.73	3.00	2.94	3.56	3.44	4.85	4.52
40	11/2	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	21/2	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	65.5
250	10	273.05	3.40	22.74	4.19	27.94	6.35	42.00	9.27	60.64	12.70	82.00
300	12	323.85	3.96	31.42	4.57	36.19	6.35	50.00	9.52	74.21	12.70	98.00

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 SQUARE PIPE 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
Size 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
Size in mm	kg/mtr											
30 x 20	0.69	0.77	0.92	1.13	1.21	1.49	1.89	2.16	-	-	-	-
40x20	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---5mm	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
	75 to 100 mm incl.	0.38	0.38		0.0		0	Refered ASTM A 1016
ASTM A 249- Welded Super Heater, 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 Refered 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 A268- 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 Refered to ASTM A 1016
	203.2 to 304.8 mm incl.	1.01	1.01	10.0	10.0	4.8	0	
	304.8 to 355.6 mm incl.	1.26	1.26	10.0	10.0	4.8	0	
ASTM A 270- Seamless & Welded Stainless Steel Sanitary Tubing	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 Refered 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	
	203.2 to 304.8 mm incl.	1.27	1.27	12.5	12.5	4.8	0	
ASTM A312- Seamless & Welded Heavily Cold Worked Austenitic Stainless Steel Pipes	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 Refered 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	-	-			
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	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 Refered 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	

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	❖ 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	❖ 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	❖ Dimensions-Diameter (Ovality), Thickness & Length ❖ Surface defects	One sample from each lot	Micrometer, Vernier Measuring Tape	Dimesions acceptance as per order confirmto standard Specification
05	Annealing	Temperature as per ASTM Standard	❖ 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	❖ 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	Electro Polished Tubes	As per Requirements	VDI 100%	100% Inspection both inside & outside of the tubes	Boroscope	Conform to requirement
16	Marking	As per Requirement/ Standard	❖ Spell Check ❖ Details Verification	First 2 pipes/Tubes of each Lot	Visual Inspection	Confirm to Requirement
17	Packing & Delivery	As per Requirement	Packing Quality & Tightness of Packing	100%	Visual Inspection	Confirm to Requirement

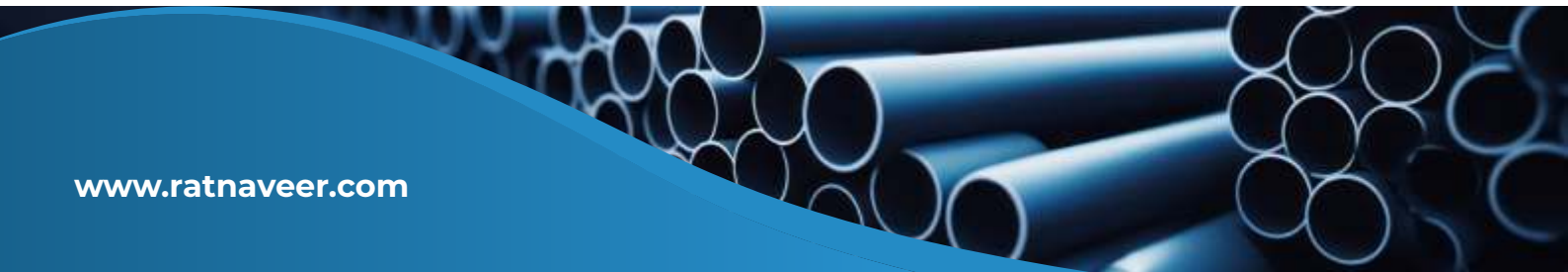
QAP may be finalized as per customer requirement at the time of order acceptance.

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 entire length of the tube to detect Cracks/Defects
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 camed 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 hardriess value of Tubes & Pipes. • **Reverse Bend Test:** Reverse Bend Test is done to test the welding strength. • **Hardness Test:** Hardness Tester is used for measuring hardriess 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
RA Value Testing & Boroscopic Inspection	For special purpose Electropolished Tubes, measurement of RA value is done. Boroscopic Inspection of each & every tube is done for inside surface finish of the tubes.

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 (%)										
PROCESS DESCRIPTION	Steel No. Equivalent to DIN EN(Max)	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	AUSTENTIC
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	0.030	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	0.030	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 3095	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 3105	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	0.030	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	0.030	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-0.10Max	
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	0.030	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	17.0-19.0	9.0-12.0	-	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 0.18-022 & Cu0.5-1.0	

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	FERRETIC MARTENSITIC
TP 409	1.4512	0.08	1.00	0.045	0.030	1.00	10.5-11.7	05	-	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, 0.5T1-0.20+4(C+N) Min, 1.10 Max	

DUPLEX & SUPER DUPLEX GRADES

UNS S31500	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	FERRETIC MARTENSITIC
UNS S31803	1.4362	0.03	2.00	0.030	0.020	1.00	21.0-23.0	4.5-6.5	2.50-3.50	N-0.14-0.20	
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-0.5Max"	
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""	

PHYSICAL PROPERTIES

GRADE	TENSILE STRENGTH KSI (MPA)	YIELD STRENGTH KSI (MPA)	ELONGATION IN 2 INCHES %MIN	HARDNESS (MAX)		THERMAL CONDUCTIVITY COL/SEC.CM^{0}C AT TEMP RANGE 20-500^{0}C	CO-EFFICIENT OF EXPANSION X 10^{-6} CM/CM/^{0}C AT TEMP RANGE 20-870^{0}C
				BRINNEL (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 S31803	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

UNIVERSAL TESTING MACHINE

HARDNESS TESTING MACHINE

METALLURGICAL MICROSCOPE

SPECTROSCOPE

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 aesthatics.

LABELLING

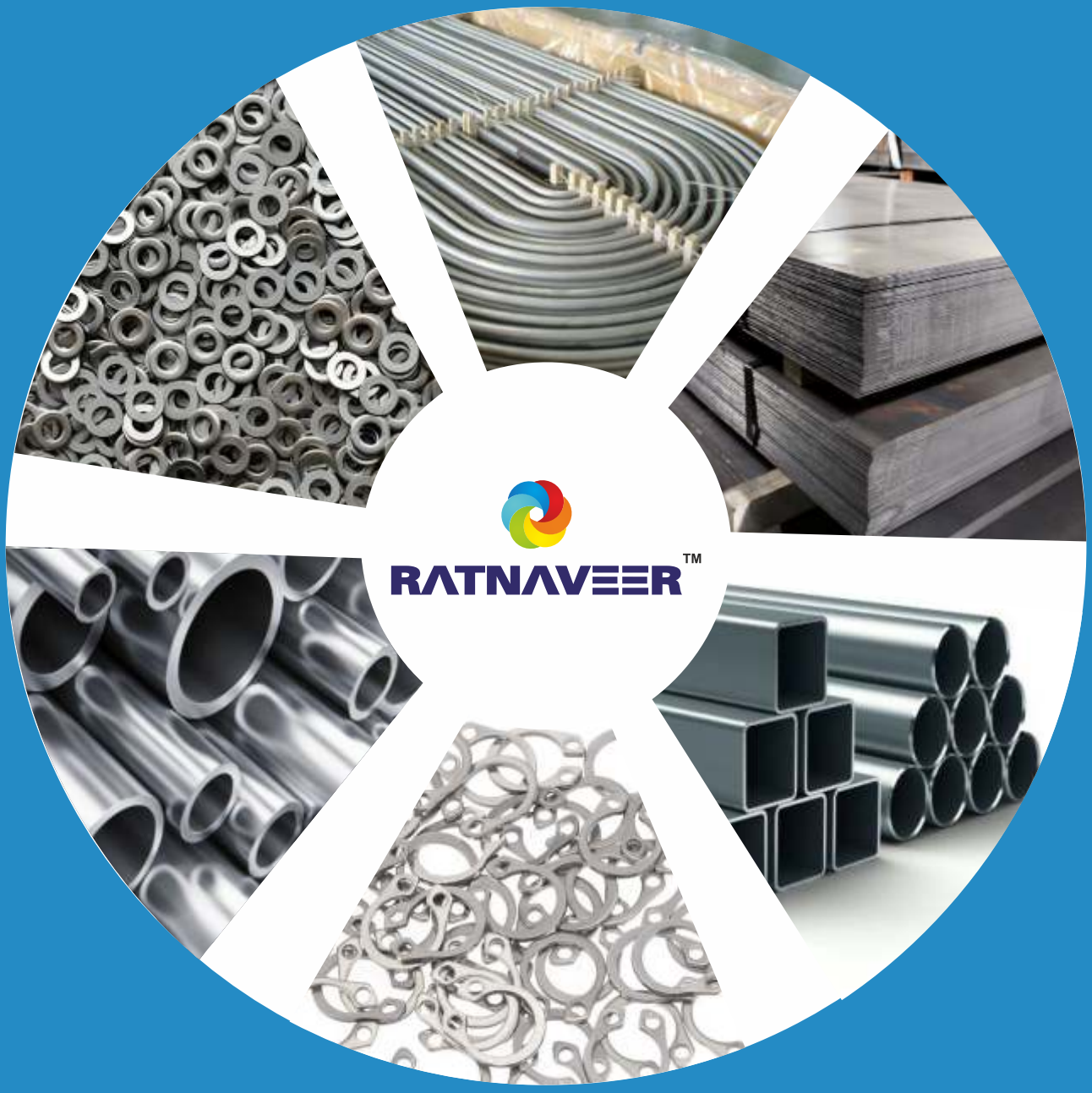
Standard marking and labeling practice as per global standards are being implemented and followed as standard practice. There will be Marking on each Tube/Pipe of its dimensions and our company's logo for the authenticity of our product.

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.



Building Trust Through Precision

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