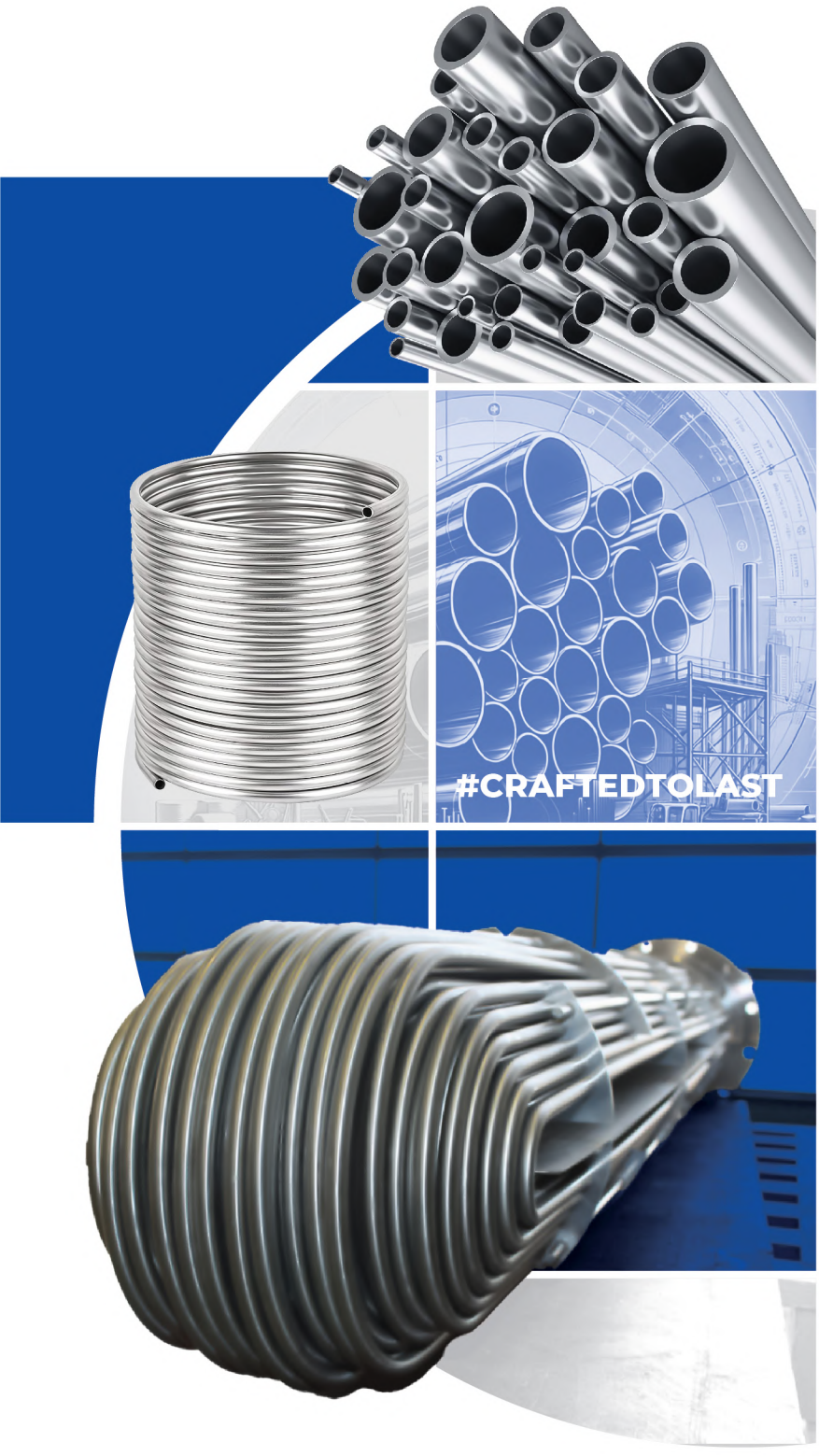
RATNATECH
STAHL PVT LTD

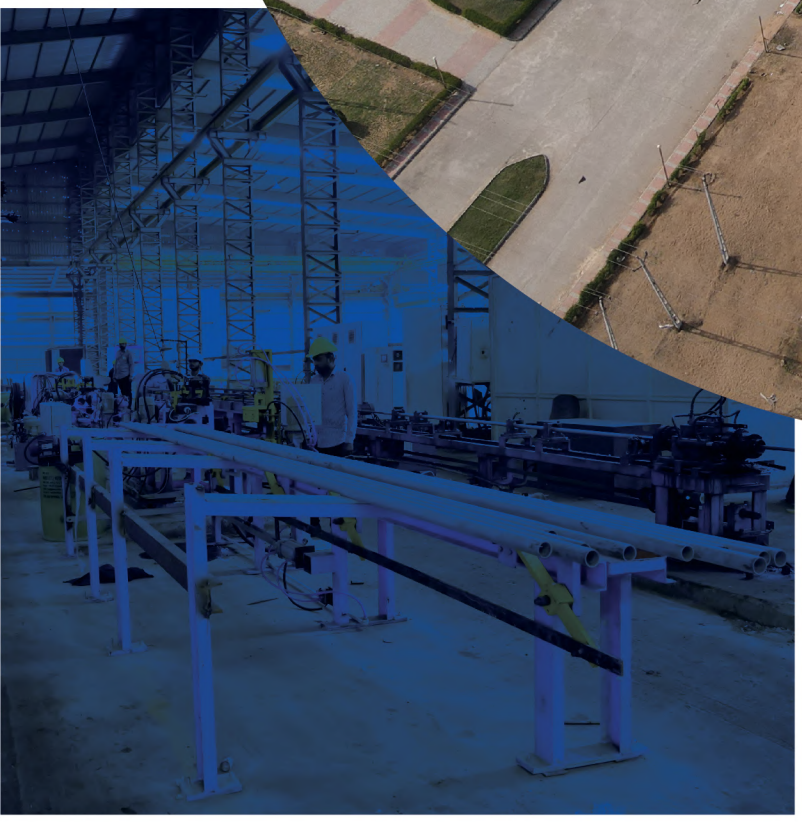
An ISO 9001:2015, 14001:2015 and 45001:2018 Certified Company



Product Catalogue

Manufacturer and Exporter of Stainless Steel Seamless and Welded Pipes | Tubes | U-Tubes | Coil Tubes | Corrugated Tubes.

ratnatechstahl.com



PLANT

Situated at Rajpur, Gujarat (Ahmed-abad-Mehsana Highway) in radius of 45km north of Ahmedabad with 328000 sq ft. plot area manufacturing facility.

CRAFTEDTOLAST

COMPANY PROFILE

Ratnatech is an ISO 9001:2015 Certified co. introduced as highly commended manufacturer and exporter of metal products in form of Seamless, Welded Pipes, Tubes & U-Tubes in Stainless Steel, Duplex, Super Duplex, Titanium Alloys, Aerospace Alloys & Special Alloys. Ensuring the finest products for our clients with modern production facilites including Cold Pilgering Mills, Tube mills with Plasma Welding, Draw Benches, Heat Treatment Solution & Bright Annealing Furnaces, U-Bending facilities and many more ancillary machinery and testing equipments to produce high quality tubes and pipes confirming to various international standards.

Our facilities are capable of manufacturing tubular products in martensitic, ferritic, austenitic, duplex / super duplex and high nickel alloys grades. Here, tubes and pipes produced and supplied according to appropriate standards as well as customer specifications in good variety of steel grades and dimensions. Ratnatech's manufacturing programme consists of outside diameter of 3.00mm to 323.90mm with wall thickness of 0.50mm to 5.00mm, with specific requirements on execution, tolerances, lengths, mechanical and corrosion properties offered on request.

Ratnatech has a strong infrastructure and highly qualified, skilled and experienced engineers who contribute towards the company's growth and strives to produce best quality products in professionally managed work culture. We also conduct regular in-house as well as external training programme for our team to keep pace with ever changing technology.

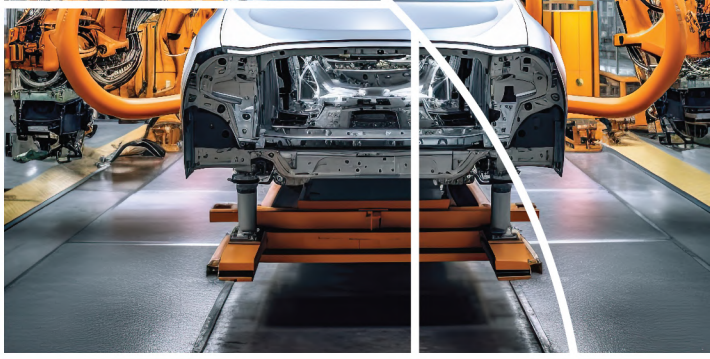
VISION

To be the first choice of our customers by providing world class Pipes & Tubes.

MISSION

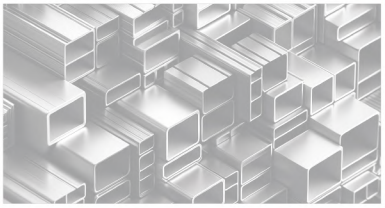
Aspire to be a global organisation for tubular solutions based on transperancy, structured systems that can encourage our business partners and employees to be with us for mutual growth.

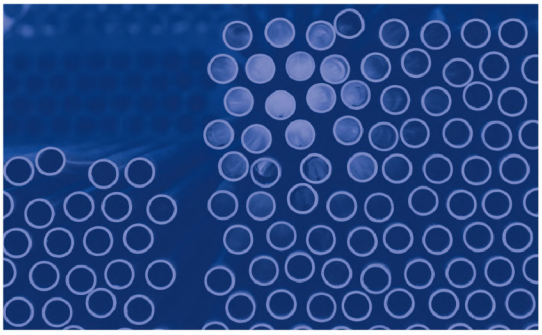
APPLICATIONS



| Heat Exchangers | Pharmaceuticals
| Petrochemicals & Refineries
| Power Plant | Oil & Gas | Chemicals
| Aerospace | Automobile
| Food Processing | Paper Pulp
| Construction | Dairy | Defence
| Sugar | Marine | Thermal | Solar

PRODUCTS





Stainless Steel High Precision & Heat Exchanger Tubes

Outside Diameter	3.00 mm to 101.60 mm
Wall Thickness	0.50 mm to 10.00 mm
Length	Size Up to 30 Meter Long
U-Tubes	As Per Customer's Drawing, Developed Length up to 50 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	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, SB-163, SB-167, SB-338, SB-407, SB-423 & SB-444
Supply Condition	Solution-Annealed, Pickled & Passivated / Bright Annealed
Application	• 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, AFNOR & GOST also available

Stainless Steel Hydraulic & Instrumentation Tubes

Outside Diameter	3.00 mm to 25.40 mm OD
Wall Thickness	0.50 mm to 6.00 mm
Length	Straight Length Upto 55 Meter Long, and 100 Meter for Small Diameter in Coil Form
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, SB-163, SB-167, SB-407, SB-423 & SB-444
Supply Condition	Solution-Annealed, Pickled & Passivated / Bright Annealed
Application	• Nuclear & Thermal Power generation • Oil & Gas • Process Industries • Chemical & Fertilizer • Nuclear Power • Food & Beverage Processing • Automotive • Aerospace • Medical & Pharmaceutical

Contact sales for more available grades
* Specifications as per ASTM, ASME, DIN, JIS (JAPAN), EN, AFNOR & GOST also available

Stainless Steel Seamless Pipes

Outside Diameter	1/8" NPS to 12" NPS
Wall Thickness	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, A-376, SB-167, SB-407, SB-423, SB-444 & SB-861
Supply Condition	Solution-Annealed, pickled and passivated. Can be supplied in other conditions on requirement.
Application	Onshore and Offshore Oil and Gas Production, Exploration and Transport (OCTG – Oil Country Tubular Goods) • Chemical & Petrochemical • Energy & Power Generation • Mechanical & Plant Engineering • Marine Equipment's • Pulp & Paper • Pharmaceutical Industry

Contact sales for more available grades
* Specifications as per ASTM, ASME, DIN, JIS (JAPAN), EN, AFNOR & GOST also available

Stainless Steel Welded Pipes

Outside Diameter	1/8” NPS to 12” NPS
Wall Thickness	SCH 5S to SCH 80S
Length	As per Requirement. Maximum up to 35 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, SB-862
Supply Condition	Solution-Annealed, pickled and passivated. Can be supplied in other conditions on requirement.
Application	• Chemical & Petrochemical • Gas Industry • Power Generation • Mechanical & Plant Engineering • Marine Equipment’s • Pulp & Paper • Pharmaceutical Industry

Stainless Steel Box Pipes

Square	15×15 mm to 100×100 mm
Rectangular	15×30 mm to 100×50 mm
Wall Thickness Range	1.0 mm to 6.0 mm
Length	As per Requirement. Maximum up to 12 Meter long
Grades	As per Requirement.
Specification	As per Requirement.
Supply Condition	Annealed, pickled and passivated. Can be supplied polished condition on requirement.

Contact sales for more available grades
* Specifications as per ASTM, ASME, DIN, JIS (JAPAN), EN, AFNOR & GOST also available

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
A1016	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

German Standards	
GOST 9941	Seamless and warm-deformed tubes made from corrosion-resistant steel

MECHANICAL PROPERTIES OF STAINLESS STEEL

Mechanical Properties				
	Tensile Strength	Yield Strength	Elongation %	Hardness
Grade	Min. Ksi (Mpa)	Min. Ksi (Mpa)	GL : 50 mm MIN	HRB MAX
TP 304	75 (515)	30 (205)	35	90
TP 304H	75 (515)	30 (205)	35	90
TP 304L	70 (485)	25 (170)	35	90
TP 316	75 (515)	30 (205)	35	90
TP 316H	75 (515)	30 (205)	35	90
TP 316L	70 (485)	30 (170)	35	90
TP 316Ti	75 (515)	30 (205)	35	90
TP 309S	75 (515)	30 (205)	35	90
TP 310S	75 (515)	30 (205)	35	90
TP 317	75 (515)	30 (205)	35	90
TP 317L	75 (515)	30 (205)	35	90
TP 321	75 (515)	30 (205)	35	90
TP 347	75 (515)	30 (205)	35	90
TP 405	60 (415)	30 (205)	20	95
TP 409	55 (380)	25 (170)	20	95
TP 410	60 (415)	25 (205)	-	95
TP 430	60 (415)	35 (240)	35	90
TP 904L	71 (490)	31 (215)	40	90
1.4301	(500-700)	(195)	40	-
1.4307	(460-680)	(180)	40	-
1.4401	(510-710)	(205)	40	-
1.4404	(490-690)	(190)	40	-
1.4541	(500-730)	(200)	35	-
1.4571	(500-730)	(210)	35	-
1.4462	(640-880)	(450)	15	-
UNS S31803	90 (620)	65 (450)	25	30 HRC
UNS S32750	116 (800)	80 (550)	15	32 HRC
UNS S32205	95 (655)	70 (-485)	25	30 HRC

CHEMICAL COMPOSITION OF STAINLESS STEEL

ASTM GRADE	UNS GRADE	DIN EN GRADE	STEEL NAME	JIS GRADE	C	Mn	P	S	
TP 304	S30400				0.080	2.00	0.045	0.030	
		1.4301	X2CrNi 18-10		0.070	2.00	0.040	0.015	
				SUS304TB	0.080	2.00	0.040	0.030	
TP 304L	S30403				0.035	2.00	0.043	0.030	
		1.4307	X2CrNi 18-9		0.030	2.00	0.040	0.015	
				SUS304LTB	0.030	2.00	0.040	0.030	
TP 304H	S30409				0.04-0.10	2.00	0.045	0.030	
		1.4948	X6CrNi 18-10		0.04-0.08	2.00	0.035	0.015	
				SUS304HTB	0.04-0.10	2.00	0.040	0.030	
TP 310S	S31008				0.080	2.00	0.045	0.030	
		1.4845	X8CrNi 25-21		0.100	2.00	0.0435	0.015	
				SUS310STB	0.080	2.00	0.040	0.030	
TP 310H	S31009				0.04-0.10	2.00	0.045	0.030	
		1.4335	X1CrNi 25-21		0.020	2.00	0.025	0.010	
TP 316	S31500				0.080	2.00	0.045	0.030	
		1.4401	X5CrNiMo 17-12-2		0.070	2.00	0.040	0.015	
				SUS316TB	0.080	2.00	0.040	0.030	
TP 316L	S31603				0.035	2.00	0.045	0.030	
		1.4404	X2CrNiMo 17-12-2		0.030	2.00	0.040	0.015	
				SUS316LTB	0.030	2.00	0.040	0.030	
TP 316H	S31609				0.04-0.10	2.00	0.045	0.030	
		1.4918	X6CrNiMo 17-13-2		0.04-0.08	2.00	0.035	0.015	
				SUS36HTB	0.04-0.10	2.00	0.030	0.030	
TP 316 Ti	S31635				0.080	2.00	0.045	0.030	
		1.4571	X6CrNiMoTi 17-12-2		0.080	2.00	0.040	0.015	
				SUS3E16TITB	0. 080	2.00	0.040	0.030	
TP 321	S32100				0.080	2.00	0.045	0.030	
		1.4541	X6CrNiTi 18-10		0.080	2.00	0.040	0.015	
				SUS321TB	0.080	2.00	0.040	0.030	
TP 321H	S32109				0.04-0.10	2.00	0.0435	0.030	
		1.4941	X5CrNiTiBi 18-10		0.04-0.08	2.00	0.035	0.015	
				SUS321HTB	0.04-0.10	2.00	0.030	0.030	
TP 347	S34700				0.080	2.00	0.045	0.030	
		1.455	X5CrNiNb 18-10		0.080	2.00	0.040	0.015	
				SUS3TTB	0.080	2.00	0.040	0.030	
TP 347H	S34709				0.04-0.10	2.00	0.045	0.030	
		1.4912	X7CrNiNb 18-10		0.04-0.10	2.00	0.040	0.015	
				SUS34THTB	0.04-0.10	2.00	0.030	0.030	
TP 405	S40500				0.080	1.00	0.040	0.030	
		1.4002	X6CrAi 13		0.080	1.00	0.040	0.015	
TP 410	S41000				0.130	1.00	0.040	0.030	
		1.4006	X12Cr 13		0.018-0.15	1.50	0.040	0.015	
TP 430	S43000				0,120	1.00	0.040	0.030	
		1.4016	X6Cr 17		0.080	1.00	0.040	0.015	
	UNS S31803				0.030	2.00	0.030	0.020	
2205	USN S32205				0.030	2.00	0.030	0.020	
		1.4452	X2CrNiMoN 22-5-3		0.030	2.00	0.035	0.015	
2507	UNS S32750				0,030	1.20	0.030	0.020	
		1.441	X2CrNiMoN25-7-4		0.030	2.00	0.035	0.015	
	UNS S32760				0.050	1.00	0.030	0.010	
		1.4501	X2CrNiMoCuWN25-7-4		0.030	1.00	0.035	0.015	

	S	Cr	Ni	Mo	N	Nb	Ti	Cu	Al	W	B
	1.00	18.0-20.0	8.00-11.0								
	1.00	17.0-19.5	8.00-10.5		0. 10 Max						
	1.00	18.0-20.0	8.00-11.0								
	1.00	18.0-20.0	8.00-12.0								
	1.00	17.5-19.5	8.00-10.0		0. 10 Max						
	1.00	18.0-20.0	9.00-13.0								
	1.00	18.0-20.0	8.00-11.0								
	1.00	17.0-19.0	8.00-11.0								
	0.75	18.0-20.0	8.00-11.0								
	1.00	24.0-26.0	19.00-22.0								
	1.50	24.0-26.0	19.00-22.0		0. 11 Max						
	1.50	24.0-26.0	19.00-22.0								
	1.00	24.0-26.0	19.00-22.0								
	0.25	24.0-26.0	20.00-22.0	0.20 Max							
	1.00	16.0-18.0	11.00-14.0	2.00-3.0							
	1.00	16.5-18.5	10.00-13.0	2.00-2.5	0. 10 Max						
	1.00	16.0-18.0	10.00-14.0	2.00-3.0							
	1.00	16.0-18.0	10.00-14.0	2.00-3.0							
	1.00	16.5-18.5	11.00-13.0	2.00-2.5	0. 10 Max						
	1.00	16.0-18.0	12.00-16.0	2.00-3.0							
	1.00	16.0-18.0	11.00-14.0	2.00-3.0							
	0.75	16.0-18.0	12.00-14.0	2.00-2.5							
	0.75	16.0-18.0	11.00-14.0	2.00-3.0							
	0.75	16.0-18.0	10.00-14.0	2.00-3.0	0. 10 Max		5(C+N)-0.70				
	1.00	16.5-18.5	10.50-13.5	2.00-2.5			5XC TO 0.70				
	1.00	16.0-18.0	10.00-14.0	2.00-3.0			5XC Min				
	1.00	17.0-19.0	9.00-12.0				5(C+N)-0.70				
	1.00	17.0-19.0	9.00-12.0				5XC TO 0.70				
	1.00	17.0-19.0	9.00-13.0				5XC Min				
	1.00	17.0-19.0	9.00-12.0				5(C+N)-0.70				
	1.00	17.0-19.0	9.00-12.0				5XC - 0.80				
	0.75	17.0-20.0	9.00-13.0				4XC - 0.60				
	1.00	17.0-20.0	9.00-13.0			10XC-1.10					0.0015-0.00050
	1.00	17.0-19.0	9.00-12.0			10XC-1.0					
	1.00	17.0-19.0	9.00-13.0			10XC Min					
	1.00	17.0-19.0	9.00-13.0			5XC-1.10					
	1.00	17.0-19.0	9.00-12.0		0. 10 Max	10XC-1.2					
	1.00	17.0-19.0	9.00-13.0			8XC-1.00					
	1.00	11.5-14.5	0.50 Max						0.10-0.30		
	1.00	12.0-14.0							0.10-0.30		
	1.00	11.5-13.5									
	1.00	11.5-13.5	0.75								
	1.00	16.0-18.0									
	1.00	16.0-18.0									
	1.00	21.0-23.0	4.50-6.50	2.50-3.5	0.08-0.20						
	1.00	22.0-23.0	4.50-6.50	3.00-3.5	0.14-0.20						
	1.00	21.0-23.0	4.50-6.50	2.50-3.5	0.10-0.22						
	0.90	24.0-26.0	6.00-8.0	3.00-5.0	0.24-0.30			0.50 Max			
	1.00	24.0-26.0	6.00-8.0	3.00-4.5	0.24-0.35						
	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	
	1.00	24.0-26.0	6.00-8.0	3.00-4.0	0.20-0.30				0.50-1.00		

PIPE CHART SIZE

DN	DN	OD	SCH 5S	SCH 5	SCH 10S	SCH 10	SCH 20	SCH 30	STD WT	SCH 40S
inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
1/8	6	10.3	–	–	1.24	1.24	–	–	1.73	1.73
1/4	8	13.7	–	–	1.65	1.65	–	–	2.24	2.24
3/8	10	17.1	–	–	1.65	1.65	–	–	2.31	2.31
1/2	15	21.3	1.65	1.65	2.11	2.11	–	–	2.77	2.77
3/4	20	26.6	1.65	1.65	2.11	2.11	–	–	2.87	2.87
1	25	33.4	1.65	1.65	2.77	2.77	–	–	3.38	3.38
1-1/4	32	42.1	1.65	1.65	2.77	2.77	–	–	3.56	3.56
1-1/2	40	48.2	1.65	1.65	2.77	2.77	–	–	3.65	3.65
2	50	60.3	1.65	1.65	2.77	2.77	–	–	3.91	3.91
2-1/2	65	73	2.11	2.11	3.05	3.05	–	–	5.16	5.16
3	80	88.9	2.11	2.11	3.05	3.05	–	–	5.49	5.49
3-1/2	90	101.6	2.11	2.11	3.05	3.05	–	–	5.74	5.74
4	100	114.3	2.11	2.11	3.05	3.05	–	–	6.02	6.02
5	125	141.3	2.77	2.77	3.40	3.40	–	–	6.55	6.55
6	150	168.2	2.77	2.77	3.40	3.40	–	–	7.11	7.11
8	200	219	2.77	2.77	3.76	3.76	6.35	7.04	8.18	8.18
10	250	273	3.40	3.40	4.19	4.19	6.35	7.80	9.27	9.27
12	300	323.8	3.96	3.96	4.57	5.57	6.35	8.38	9.53	9.53
14	350	355.6	3.96	3.96	4.78	6.35	7.92	9.53	9.53	9.53
16	400	406.4	4.19	4.19	4.78	6.35	7.92	9.53	9.53	9.53
18	450	457.2	4.19	4.19	4.78	6.35	7.92	11.13	9.53	9.53
20	500	508	4.78	4.78	5.54	6.35	9.53	12.70	9.53	9.53
22	550	558.8	4.78	4.78	5.54	6.35	9.53	12.70	9.53	9.53
24	600	609.6	5.54	5.54	6.35	6.35	9.53	14.27	9.53	9.53
26	650	660.4	–	–	–	7.92	12.70	–	9.53	–
28	700	711.2	–	–	–	7.92	12.70	15.88	9.53	
30	750	762	6.35	6.35	7.92	7.92	12.70	15.88	9.53	9.53
32	800	812.8	–	–	–	7.92	12.70	15.88	9.53	–
34	850	863.3	–	–	–	7.92	12.70	15.88	9.53	–
36	900	914.4	–	–	–	7.92	12.70	15.88	9.53	–
38	950	965.2	–	–	–	–	–	–	9.53	–
40	1000	1016	–	–	–	–	–	–	9.53	–
42	1050	1066.8	–	–	–	–	–	–	9.53	–
44	1100	1117.6	–	–	–	–	–	–	9.53	–
46	1150	1168.4	–	–	–	–	–	–	9.53	–
48	1200	1219.2	–	–	–	–	–	–	9.53	–

SCH 40	SCH 60	SCH XS	SCH 80S	SCH 80	SCH 100	SCH 120	SCH 140	SCH 160	STD XXS	
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
1.73	–	2.41	2.41	2.41	–	–	–	–	–	
2.24	–	3.02	3.02	3.02	–	–	–	–	–	
2.31	–	3.20	3.20	3.20	–	–	–	–	–	
2.77	–	3.73	3.73	3.73	–	–	–	4.78	7.47	
2.87	–	3.91	3.91	3.91	–	–	–	5.56	7.82	
3.38	–	4.55	4.55	4.55	–	–	–	6.35	9.09	
3.56	–	4.85	4.85	4.85	–	–	–	6.35	9.70	
3.65	–	5.08	5.08	5.08	–	–	–	7.14	10.15	
3.91	–	5.54	5.54	5.54	–	–	–	8.74	11.07	
5.16	–	7.01	7.01	7.01	–	–	–	9.53	14.02	
5.49	–	7.62	7.62	7.62	–	–	–	11.13	15.24	
5.74	–	8.08	8.08	8.08	–	–	–	–	–	
6.02	–	8.56	8.56	8.56	–	11.13	–	13.49	17.12	
6.55	–	9.53	9.53	9.53	–	12.70	–	15.88	19.05	
7.11	10.31	10.97	10.97	10.97	–	14.27	–	18.26	21.95	
8.18	12.70	12.70	12.70	12.70	15.09	18.26	20.62	23.01	22.23	
9.27	14.27	12.70	12.70	15.09	18.26	21.44	25.40	28.58	25.40	
10.31	15.09	12.70	12.70	17.48	21.44	25.40	28.58	33.32	25.40	
11.31	16.66	12.70	12.70	19.05	23.83	27.79	31.75	35.71	–	
12.70	19.05	12.70	12.70	21.44	26.19	30.96	36.53	40.49	–	
14.27	20.62	12.70	12.70	23.83	29.36	34.93	39.67	45.24	–	
15.09	22.23	12.70	12.70	26.19	32.54	38.10	44.45	50.01	–	
–	24.61	12.70	12.70	28.58	34.93	41.28	47.63	53.98	–	
17.48	–	12.70	12.70	38.96	38.89	46.02	52.37	59.84	–	
–	–	12.70	–	–	–	–	–	–	–	
–	–	12.70	–	–	–	–	–	–	–	
–	–	12.70	12.70	–	–	–	–	–	–	
17.48	–	12.70	–	–	–	–	–	–	–	
17.48	–	12.70	–	–	–	–	–	–	–	
19.05	–	12.70	–	–	–	–	–	–	–	
–	–	12.70	–	–	–	–	–	–	–	
–	–	12.70	–	–	–	–	–	–	–	
–	–	12.70	–	–	–	–	–	–	–	
–	–	12.70	–	–	–	–	–	–	–	
–	–	12.70	–	–	–	–	–	–	–	
–	–	12.70	–	–	–	–	–	–	–	

TUBE SIZE CHART

Outside	in mm	6.35	12.7	19.5	25.4	31.75
Diameter	in inch	1/4	1/2	3/4	1	11/4
Wall Thikness						
Gaug	mm	inch				
22 SWG 22 BWG	0.711 0.711	0.028 0.028	0.099 0.099	0.21 0.21	0.322 0.322	0.433 0.433	0.544 0.544
21 SWG 21 BWG	0.813 0.813	0.032 0.032	0.111 0.111	0.238 0.238	0.366 0.366	0.493 0.493	0.62 0.62
20 SWG 20 BWG	0.914 0.889	0.036 0.035	0.123 0.12	0.266 0.259	0.409 0.398	0.552 0.537	0.695 0.677
19 SWG 19 BWG	1.016 1.067	0.04 0.042	0.134 0.139	0.293 0.306	0.452 0.473	0.611 0.64	0.77 0.807
18 SWG 18 BWG	1.219 1.245	0.048 0.049	0.154 0.157	0.345 0.352	0.536 0.547	0.727 0.745	0.918 0.937
17 SWG 17 BWG	1.422 1.473	0.056 0.058	0.173 0.179	0.396 0.414	0.618 0.649	0.841 0.884	1.064 1.118
16 SWG 16 BWG	1.626 1.651	0.064 0.065	0.189 0.191	0.444 0.45	0.699 0.708	0.953 0.967	1.208 1.226
15 SWG 15 BWG	1.829 1.829	0.072 0.072	0.204 0.204	0.49 0.49	0.777 0.777	1.063 1.063	1.35 1.35
14 SWG 14 BWG	2.032 2.108	0.08 0.083	0.216 0.221	0.535 0.551	0.853 0.881	1.171 1.211	1.489 1.541
13 SWG 13 BWG	2.337 2.143	0.092 0.095		6.493 0.612	0.963 0.99	1.329 1.368	1.695 1.746
12 SWG 12 BWG	2.642 2.769	0.104 0.109		0.655 0.678	1.069 1.112	1.483 1.541	1.897 1.979
11 SWG 11 BWG	2.946 3.048	0.116 0.12		0.709 0.726	1.17 1.203	1.631 1.68	2.093 2.157
10 SWG 10 BWG	3.251 3.404	0.128 0.134		0.758 0.78	1.267 1.313	1.776 1.847	2.285 2.38
9 SWG 9 BWG	3.658 3.759	0.144 0.148		0.816 0.829	1.389 1.418	1.961 2.006	2.534 2.595
8 SWG 8 BWG	4.064 4.191	0.16 0.165		0.866 0.879	1.502 1.536	2.138 2.192	2.775 2.848
7 SWG 7 BWG	4.470 4.572	0.176 0.18			1.607 1.632	2.307 2.348	3.007 3.064
6 SWG 6 BWG	4.877 5.156	0.192 0.202			1.705 1.761	2.468 2.574	3.232 3.382
5 SWG 5 BWG	5.385 5.588	0.212 0.22			1.815 1.855	2.658 2.73	3.501 3.605
4 SWG 4 BWG	5.893 6.045	0.232 0.238			1.912 1.939	2.835 2.885	3.758 3.832
3 SWG 3 BWG	6.401 6.579	0.252 0.259			1.997 2.023	2.999 3.054	4.002 4.084
2 SWG 2 BWG	7.010 7.214	0.276 0.284				3.179 3.235	4.277 4.362
1 SWG 1 BWG	7.620 7.620	0.3 0.3				3.341 3.341	4.535 4.535
0 SWG 0 BWG	8.229 8.636	0.324 0.34				3.485 3.57	4.779 4.923

38.1	44.45	50.8	57.15	63.5	69.85	76.2	82.55	88.9	95.25	101.6
11/4	13/4	2	21/4	21/2	23/4	3	31/4	31/2	33/4	4
0.656 0.656	0.767 0.767	0.878 0.878	0.99 0.99	1.101 1.101						
0.748 0.748	0.875 0.875	1.002 1.002	1.13 1.13	1.257 1.257						
0.838 0.816	0.981 0.955	1.124 1.094	1.268 1.233	1.411 1.373	1.554 1.512					
0.929 0.974	1.088 1.142	1.247 1.309	1.406 1.476	1.566 1.643	1.725 1.81					
1.109 1.132	1.3 1.327	1.491 1.522	1.681 1.716	1.872 1.911	2.063 2.106	2.254 2.301	2.445 2.496	2.636 2.691	2.827 2.886	
1.286 1.353	1.509 1.588	1.732 1.823	1.954 2.057	2.177 2.292	2.4 2.527	2.622 2.762	2.845 2.996	3.068 3.176	3.29 3.466	
1.463 1.484	1.717 1.743	1.972 2.001	2.226 2.26	2.481 2.518	2.736 2.777	2.99 3.035	3.245 3.294	3.5 3.552	3.754 3.811	4.009 4.07
1.636 1.636	1.922 1.922	2.209 2.209	2.495 2.495	2.782 2.782	3.068 3.068	3.355 3.355	3.641 3.641	3.927 3.927	4.214 4.214	4.5 4.5
1.807 1.871	2.126 2.201	2.444 2.531	2.762 2.861	3.08 3.192	3.399 3.522	3.717 3.852	4.035 4.182	4.353 4.512	4.671 4.842	4.99 5.172
2.061 2.124	2.427 2.502	2.793 2.879	3.159 3.257	3.525 3.635	3.891 4.013	4.257 4.391	4.623 4.769	4.989 4.147	5.355 5.525	5.721 5.902
2.31 2.413	2.724 2.846	3.138 3.28	3.552 3.714	3.965 4.147	4.379 4.581	4.793 5.014	5.206 5.448	5.62 5.882	6.034 6.315	6.448 6.749
2.554 2.635	3.015 3.112	3.477 3.589	3.938 4.067	4.399 4.544	4.861 5.021	5.322 5.499	5.783 5.976	6.245 6.453	6.706 6.931	7.167 7.408
2.794 2.913	3.303 3.446	3.812 3.979	4.321 4.512	4.83 5.045	5.34 5.578	5.849 6.111	6.358 6.644	6.867 7.177	7.376 7.71	7.885 8.243
3.107 3.183	3.68 3.772	4.253 4.361	4.826 4.949	5.398 5.538	5.971 6.127	6.544 6.715	7.117 7.304	7.69 7.893	8.263 8.481	8.836 9.07
3.411 3.505	4.048 4.161	4.684 4.817	5.321 5.474	5.957 6.13	6.593 6.786	7.23 7.433	7.866 8.099	8.503 8.755	9.139 9.412	9.775 10.068
3.707 3.78	4.407 4.496	5.107 5.212	5.807 5.928	6.507 6.644	7.207 7.36	7.907 8.076	8.607 8.792	9.307 9.508	10.007 10.224	10.707 10.94
3.996 4.189	4.76 4.996	5.523 5.804	6.287 6.611	7.051 7.419	7.815 8.226	8.578 9.034	9.342 9.841	10.106 10.648	10.87 11.456	11.633 12.263
4.345 4.48	5.188 5.356	6.031 6.231	6.875 7.106	7.718 7.981	8.561 8.856	9.404 9.731	10.248 10.606	11.091 11.481	11.934 12.356	12.778 13.231
4.681 4.779	5.603 5.725	6.526 6.672	7.449 7.619	8.372 8.565	9.295 9.512	10.218 10.459	11.141 11.405	12.063 12.352	12.986 13.299	13.909 14.245
5.004 5.114	6.006 6.144	7.009 7.175	8.011 8.205	9.014 9.235	10.016 10.266	11.018 11.296	12.021 12.326	13.023 13.356	14.026 14.387	15.028 15.417
5.375 5.495	6.473 6.625	7.57 7.754	8.668 8.884	9.766 10.014	10.864 11.143	11.961 12.273	13.059 13.403	14.157 14.533	15.255 15.662	16.352 16.792
5.728 5.728	6.921 6.921	8.114 8.117	9.308 9.308	10.501 10.501	11.694 11.694	12.888 12.888	14.084 14.081	15.274 15.274	16.467 16.467	17.661 17.661
6.062 6.275	7.351 7.628	8.639 8.98	9.928 10.332	11.217 11.685	12.505 13.037	13.794 14.39	15.083 15.742	16.371 17.094	17.66 18.447	18.949 19.799

TOLERANCE CHART

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%

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%

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	+20.0, -12.5%
"1⁄8 to 2.1⁄2 incl., all t/D ratios"	–	+22.5, -12.5%
"3 to 18 incl., t/D up to 5 % incl."	–	+15.0, -12.5%
3 to 18 incl., t/D > 5%	–	+17.5, -12.5%
"20 and larger, welded, all t/D ratios"	–	+22.5, -12.5%
20 and larger,seamless, t/D up to 5 % incl.	–	+15.0, -12.5%
"20 and larger, seamless, t/D > 5 %"	–	

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%

ASTM A-213/A1016
(Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes)

Under 1 [25]	+0.1, -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	+0.2, -0.20	+20%, -0.0%
2 to 2.1/2 [50 to 65], excl	+0.25, -0.25	+20%, -0.0%
2.1/2 to 3 [65 to 75], excl	+0.30, -0.30	+20%, -0.0%
3 to 4 [75 to 100], incl	+0.38, -0.38	+20%, -0.0%
Over 4 to 7.1/2 [100 to 200], incl	+0.38, -0.64	+20%, -0.0%
Over 7.1/2 to 9 [200 to 225], incl	+0.38, -1.14	+20%, -0.0%

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

ASTM A-268/A789
(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, -0.76	+10.0%, -10.0%

QUALITY POLICY

Ratnatech is dedicated to Produce World class tubular products by implementing innovative technologies-skilled workmanship and ensuring ample resources in every aspect.

We are equally dedicated to meeting customer needs and expectations by actively engaging all employees at each level and cultivating a sense of pride among them.
Ratnatech sources all its raw materials from authorized high-quality suppliers, adhering to approved manufacturing and inspection plans for quality. Additionally, incoming materials undergo rigorous quality testing upon receipt.

The quality control division oversees and ensures quality assurance from the stage raw material to finishing to meet customer as well as standard specifications.

TWO TYPES OF QUALITY TESTING PROCESS WE FOLLOW

Destructive Testing

- Tensile Test
- Hardness Test
- Flattening Test
- Flarring / Drift Expanding Test
- Flange Test
- Reverse - Bend Test
- IGC Test - Practice A,B,C & E
- Reverse - Flattening Test
- “U” Bend Mock Up test
- Surface Roughness
- Residual Stress Measurement
- Spectro Test

Non Destructive Testing

- Hydrostatic Test
- Eddy Current Test
- Ultrasonic Test
- Air Under Water (Pneumatic) Test
- PMI Test
- Dye Penetrant Test
- Boroscopic (ID Camera) Test
- ID Eddy Current Test 7
- Ferrite Test
- Visual & Dimensional Inspection

QUALITY TESTING

Product Marking

Ratnatech ensures continuous line product marking apart one or two meter on length with full details like LOGO, Make, Size (OD X THK X Length), Specification, Grade, Heat Number, Customer Purchase Order with date, Item Code or any special requirement requested by customer.

Packaging

Ratnatech always ensures importance of customer requirements at each and every stage. Our pipes & tubes are packed as per customer requirements prior to shipment.

We also ensure protective end caps outside or inside as required, funmigation of wooden boxes as well as silica gel inside the boxes on request.

RATNATECH
STAHL PVT LTD

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