

STAINLESS STEEL

Components, Precision tubes & Pipes



MANUFACTURER & EXPORTER OF STAINLESS STEEL AUTOMOTIVE COMPONENTS, TUBES AND PIPES

COMPANY PROFILE

"GRAMYA AGRITECH PRIVATE LIMITED" is a part of the Gramya group of companies, having turnover of USD 6 Millions annually. **"GRAMYA"** is a professional manufacturer of stainless steel components, precision tubes & pipes for the automotive 2W, 3W, PV, CV, Off Road Vehicles and industrial process equipment manufacturing industry in India for their respective needs. Our state-of-the-art plant & processes are ISO 9001:2008 & IATF16949 certified and our endeavour to acquire other certifications as per our customer needs.

Established with a vision to change the dynamics of the stainless components, tubes & pipe industry in India. **"GRAMYA AGRITECH PRIVATE LIMITED"** is managed by a team of professionals with extensive skill & experience in best of Industry.

Our dreams are driven by the corporate thinking that, **"Don't make excuses, make improvements & Know us, know the quality"** We are committed to this idea and to deliver excellence.

The technologies employed for manufacturing of stainless-steel components are tube benders, hydraulic SPM's, Power Presses, tube CTL SPM's, Chamfering SPM's, pipe cutting Traubs & perforations SPM's & for manufacturing of stainless-steel tubes and pipes are Tungsten Inert Gas Welding (TIG) lines. Apart from tube mills we have ID bead Removals, Bright Annealing, Straightening, Solution Annealing, Pickling, Hydro-Testing and Outer Surface



polishing, UTM testing, Hardness testing and Weld penetrations testing to ensure best quality and performance of our products thus enabling our product range to confirm to the latest international standards such as BIS, ASTM, EN, DIN, JIS Etc.

Our state-of-the-art manufacturing plant is located within the "National Capital Region" New Delhi, India. The machines, equipment's and rolling mills, primarily from best equipment manufacturer of India & Imported are housed in a very modern premises spread over a total area of 1,20,000 SQ FTS.

INFRASTRUCTURE

Plant & Machinery

- 6 TIG Welding Tube MFG Lines
- One TIG Welding Tube MFG Line with Online Bright Annealing
- Bright Annealing Furnace
- Pickling & Passivation
- Tube Benders
- Hydraulic SPM's
- Power Press
- Traubes Cutting & Cold Saw
- Chamfering & Deburring
- Perforation M/C
- In House Modern Tool Room



Optional Processing

- Heat treatments
- Pickling & Passivation
- Outer surface brushing
- Outer & Inner surface polishing
- Bead rolling
- Cut to length
- Customized marking
- Special packaging



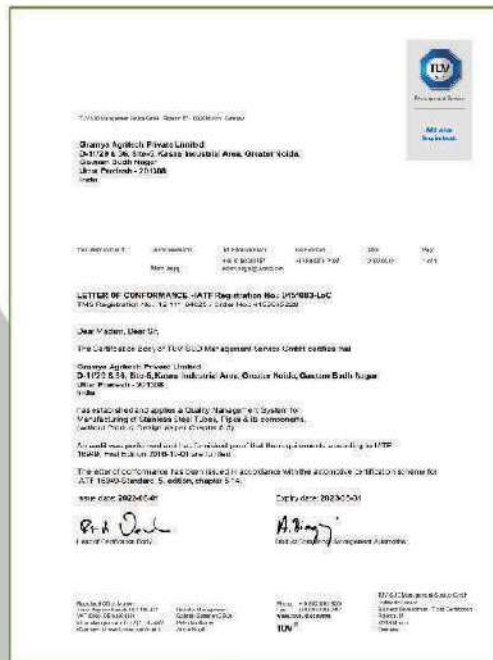
Standard & Optional Testing

- Chemical Testing
- Hydro-testing
- Micrographic analysis
- Tensile Test
- Flattening Test
- Expansion Test
- Bending Test
- Non Destructive Eddy Current Testing
- Hardness Test
- Intergranular Corrosion Test
- Dimensional & Visual Checks
- Weld Penetration Testing



Certifications

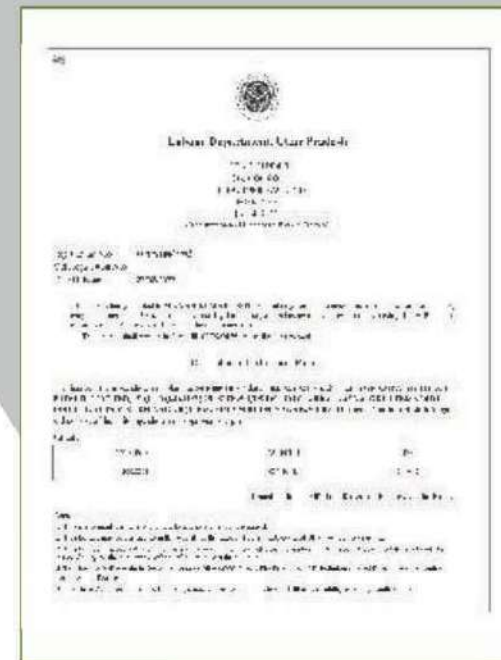
IATF-16949



ISO Certificate



Factory Certificate





APPLICATIONS Process Industry

Stainless Steel Tubes & Pipes are increasingly being used in wide range of industries and equipments all over the world due to its intrinsic strength, durability and aesthetic quality. It is replacing other alternative material and fast becoming a material of choice for most of industries for enduring most severe working conditions and hostile environment. Major sectors using stainless steel tubes & pipes are as follows:

- Automobile Industries
- Boilers
- Breweries
- Chemicals & Fertilizers
- Condensers
- Coolers
- Digesters
- Evaporators
- Feedwater Heaters
- Food & Dairies Industries
- Heat Exchangers
- Heating Elements
- Instrumentations
- Metallurgical Industries
- Oil & Gas Industries
- Ornamental & Furniture
- Power Plants
- Pharmaceuticals
- Pulp & Paper Mills
- Refrigeration
- Recuperators
- Ship and Hydraulic Fabrication
- Sugar Industries
- Space Applications
- Irrigation Industries



SPECIFICATIONS COVERED

ASTM A 213 / A213M : 2010 Standard specification for seamless ferritic and austenitic alloy-steel boiler, superheater, and heat exchanger tubes.

ASTM A 249/A249M : 2010 : Standard specification for seamless and welded ferritic and superheater, heat-exchanger, and condenser tubes.

ASTM A 268/A268M 2010 : standard specification for seamless and welded ferritic and martensitic stainless steel tubing for general service.

ASTM A 269 : 2010 : Standard specification for seamless and welded austenitic stainless steel tubing for general service.

ASTM A 270 / A270M : 2010 : Standard specification for seamless and welded austenitic stainless steel sanitary tubing.

ASTM A312 / A312M : 2009 : Standard specification for seamless, welded, and heavy cold worked austenitic stainless steel pipes.

ASTM A409/ A409 : 2009 : Standard specification for welded large diameter austenitic steel pipe for corrosive or high-temperature service.

ASTM A778 : 2001 : Standard specification for welded, unannealed austenitic stainless steel tubular products.

DIN EN 10217-7 : 2005 : Welded steel tubes for pressure purposes – technical delivery conditions – part 7 : stainless tubes.

DIN EN 10296-2 : 2006 : Welded circular steel tubes for mechanical and general engineering purposes – technical delivery conditions – part 2 : stainless steel.

DIN EN 10312 : 2005 : Welded stainless steel tubes for the conveyance of water and other aqueous liquids – technical delivery conditions.

PHYSICAL PROPERTIES

Grade	Tensile Strength KSI (Mpa)	Yield Strength KSI (Mpa)	Elongation in 2 inches %min	Max. Hardness		Thermal Conductivity Cal/sec. cm ² c At Temp Range 20-500 °c	Co-efficient of Expansion X 10 ⁻⁶ cm/ Cm/°c at Temp. Range 20-870 °c
				Brinell (HBW)	Pockwell (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) 505	(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	0.45	19.9
TP 310	(75) 515	(30) 205	35	192	90	0.044	16.8
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 316 Ti	(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	0.42	19.3
TP 317L	(75) 515	(30) 205	35	192	90	0.49	17.5
TP 321	(75) 515	(30) 205	35	192	90	0.051	19.8
TP 347	(75) 515	(30) 205	35	192	90	0.53	19.9
TP405	(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	0.62	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 S32205	(95) 655	(70) 485	25	290	30 hrc	0.041	16.9
UNS S32750	(116) 800	(80) 550	15	300	32 hrc	0.04	14.2
UNS S32760	(109) 750	(80) 550	25	300	-	0.035	13.8

CHEMICAL COMPOSITION:- 200 & 300 SERIES

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	0.150	5.5-7.5	0.060	0.030	1.00	16-18	3.5-5.5	-	N-0.25 MAX
TP 202	1.4373	0.150	7.5-10.0	0.060	0.030	1.00	17-19	4-6	-	N-0.25 MAX
TP 301	1.431	0.150	2.0	0.045	0.030	1.00	16-18	6-8	-	N-0.10 MAX
TP 304	1.4301	0.080	2.0	0.045	0.030	1.00	18-20	8-11	-	-
TP 304L	1.4307	0.035	2.0	0.045	0.030	1.00	18-20	8-12	-	-
TP 304N	-	0.080	2.0	0.045	0.030	1.00	18-20	8-11	-	N-0.10-0.16
TP 304 LN	1.4311	0.035	2.0	0.045	0.030	1.00	18-20	8-11	-	N-0.10-0.16
TP 308	-	0.080	2.0	0.045	0.030	1.00	19-21	10-12	-	-
TP 309	-	0.200	2.0	0.045	0.030	1.00	22-24	12-15	-	-
TP 309S	1.4833	0.080	2.0	0.045	0.030	1.00	22-24	12-15	-	-
TP 310	-	0.250	2.0	0.045	0.030	1.50	24-26	19-22	-	-
TP 310S	1.4845	0.080	2.0	0.045	0.030	1.00	24-26	19-22	-	-
TP 316	1.4401	0.080	2.0	0.045	0.030	1.00	16-18	10-14	2-3	-
TP 316L	1.4404	0.035	2.0	0.045	0.030	1.00	16-18	10-14	2-3	-
TP 316N	-	0.080	2.0	0.045	0.030	1.00	16-18	10-13	2-3	N-0.10-0.16
TP 316LN	1.4406	0.035	2.0	0.045	0.030	1.00	16-18	10-13	2-3	N-0.10-0.16
TP 316 Ti	1.4571	0.080	2.0	0.045	0.030	0.75	16-18	10-14	2-3	Ti-5(C+N)-0.70/ N-0.10 MAX
TP 317	-	0.080	2.0	0.045	0.030	1.00	18-20	11-15	3-4	-
TP 317L	1.4438	0.035	2.0	0.045	0.030	1.00	18-20	11-15	3-4	-
TP 321	1.4541	0.080	2.0	0.045	0.030	1.00	17-19	9-12	-	Ti-5(C+N)-0.70
TP 347	1.455	0.080	2.0	0.045	0.030	1.00	17-20	9-13	-	NB-10XC-1.10
UNS S31254	-	0.020	1.0	0.030	0.010	0.80	19.5-20.5	17.5-18.5	6.0-6.5	N 0.18-0.22 & CU 0.5-1.0



CHEMICAL & MECHANICAL COMPOSITION 400 SERIES

AISI	Steel No Equivalent to DIN EN	C MAX	Mn MAX	P MAX	S MAX	Si MAX	Cr	Ni MAX	Mo	Other Elements
TP 405	-	0.080	1.00	0.040	0.030	1.00	11.5-14.5	0.50	-	AL-0.10-0.30
TP 409	1.4512	0.080	1.00	0.045	0.030	1.00	10.5-11.7	0.50	-	TI-6XC MIN 0.75 MAX
TP 410	1.4006	0.150	1.00	0.040	0.030	1.00	11.5-13.5	-	-	-
TP 429	-	0.120	1.00	0.040	0.030	1.00	14-16	-	-	-
TP 430	1.4016	0.120	1.00	0.040	0.030	1.00	16-18	-	-	-
TP 430 TI	1.451	0.100	1.00	0.040	0.030	1.00	16-19.5	0.75	-	TI-5 X C MIN ; 0.75 MAX
TP 439	-	0.070	1.00	0.040	0.030	1.00	17-19	0.50	-	N-0.04 MAX, TI- 0.20+(C+N) MIN; 1.10 MAX

STAINLESS STEEL PIPES- DIMENSIONS AND WEIGHTS ANSI/ASME 36.19

Nominal Pipe Size (inches)	Outside Diameter		Schedule Wall Thickness and Weight							
			5S		10S		40S		80S	
	(mm)	(inches)	mm (in)	kg/m	mm (in)	kg/m	mm (in)	kg/m	mm (in)	kg/m
1/8	10.3	0.405	-	-	1.25 (0.049)	0.28	1.73 (0.068)	0.37	2.42 (0.095)	0.47
1/4	13.7	0.540	-	-	1.66 (0.065)	0.49	2.24 (0.088)	0.63	3.03 (0.119)	0.80
3/8	17.2	0.675	-	-	1.66 (0.065)	0.63	2.32 (0.091)	0.85	3.20 (0.125)	1.10
1/2	21.3	0.840	1.65 (0.065)	0.81	2.11 (0.083)	1.00	2.77 (0.109)	1.27	3.74 (0.147)	1.62
3/4	26.7	1.050	1.65 (0.065)	1.02	2.11 (0.083)	1.28	2.87 (0.113)	1.68	3.92 (0.154)	2.20
1	33.4	1.315	1.65 (0.065)	1.30	2.77 (0.109)	2.09	3.38 (0.133)	2.50	4.55 (0.179)	3.24
1 1/4	42.2	1.660	1.65 (0.065)	1.65	2.77 (0.109)	2.69	3.56 (0.140)	3.39	4.86 (0.191)	4.47
1 1/2	48.3	1.900	1.65 (0.065)	1.91	2.77 (0.109)	3.11	3.69 (0.145)	4.06	5.08 (0.200)	5.41
2	60.3	2.375	1.65 (0.065)	2.40	2.77 (0.109)	3.93	3.92 (0.154)	5.45	5.54 (0.218)	7.49
2 1/2	73.0	2.875	2.11 (0.083)	3.69	3.05 (0.120)	5.26	5.16 (0.203)	8.64	7.01 (0.275)	11.4
3	88.9	3.500	2.11 (0.083)	4.52	3.05 (0.120)	6.46	5.49 (0.216)	11.3	7.62 (0.300)	15.3
3 1/2	101.6	4.000	2.11 (0.083)	5.18	3.05 (0.120)	7.41	5.74 (0.226)	13.6	8.08 (0.318)	18.6
4	114.3	4.500	2.11 (0.083)	5.84	3.05 (0.120)	8.37	6.02 (0.237)	16.1	8.56 (0.337)	22.3
5	141.3	5.563	2.77 (0.109)	9.46	3.41 (0.134)	11.6	6.56 (0.258)	21.8	9.53 (0.375)	31.0
6	168.3	6.625	2.77 (0.109)	11.3	3.41 (0.134)	13.9	7.12 (0.280)	28.3	10.98 (0.432)	42.6

DUPLEX & SUPER DUPLEX GRADES

AISI	Steel No Equivalent to DIN EN	C MAX	Mn MAX	P MAX	S MAX	Si MAX	Cr	Ni	Mo	Other Elements
UNS S31500	1.4417	0.030	1.20-2.00	0.030	0.030	1.40-2.00	18-19	4.3-5.2	2.5-3.0	N-0.05-0.1
UNS S31803	1.4462	0.030	2.00	0.030	0.020	1.00	21-23	4.5-6.5	2.5-3.5	N-0.08-0.20
UNS S32205	-	0.030	2.00	0.030	0.020	1.00	22-23	4.5-6.5	3-3.5	N-0.14-0.20
UNS S32304	1.4362	0.030	2.50	0.040	0.040	1.00	21.5-24.5	3.0-5.5	0.05-0.60	N0.05-0.20 CU0.05-0.60
UNS S32750	1.441	0.030	1.20	0.035	0.020	0.80	24-26	6-8	3-5	N-0.24-0.32; CU- 05 MAX
UNS S32760	1.4501	0.050	1.00	0.030	0.010	1.00	24-26	6-8	3-4	N-0.20-0.30; CU- 0.5-1.0; W-0.5- 1.0; %CR+3.3X% MO+16X%N=40 MIN



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