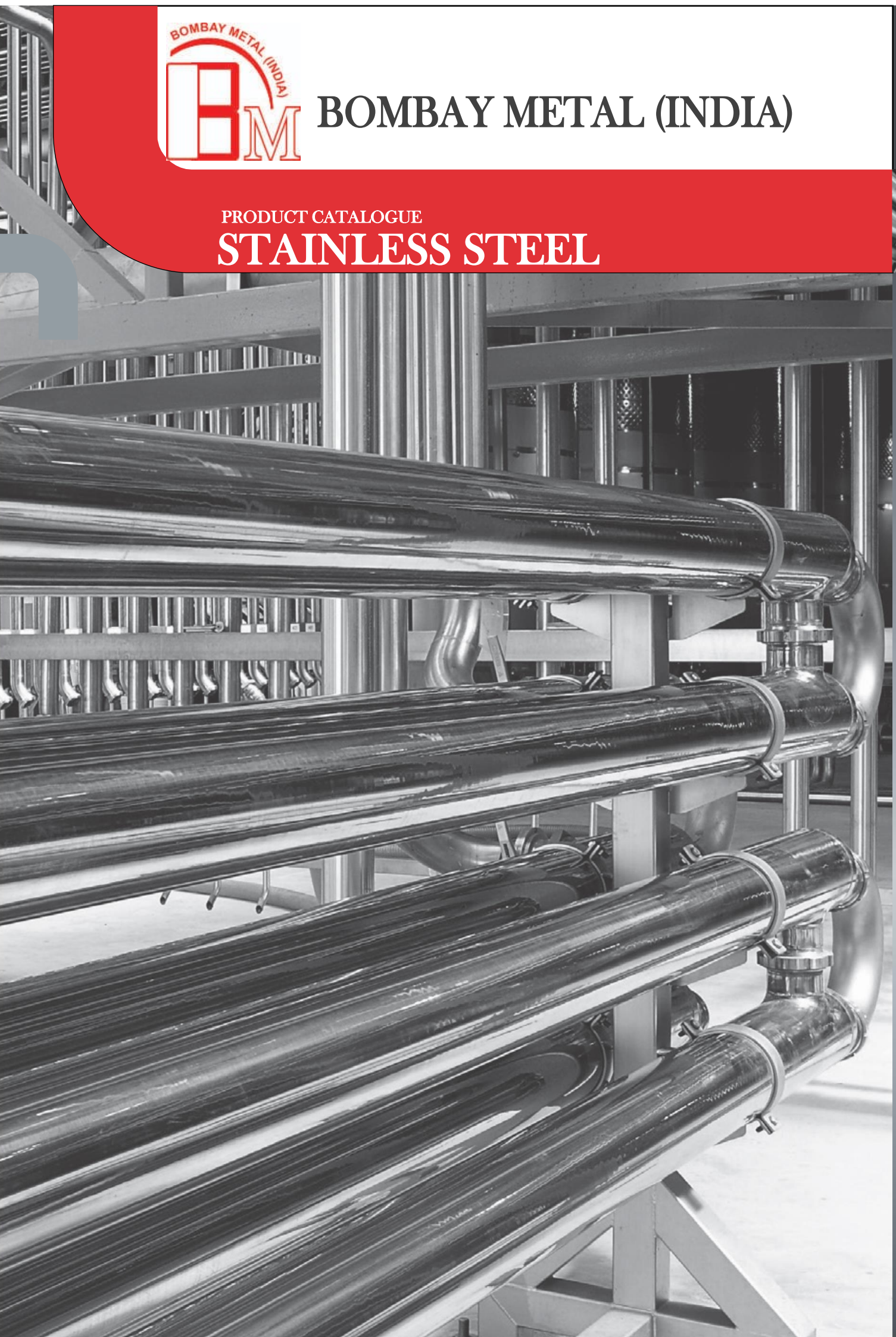
BOMBAY METAL (INDIA)

PRODUCT CATALOGUE

STAINLESS STEEL





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INTRODUCTION

Bombay Metal (INDIA) is pleased to provide this *Stainless Steel Product Catalogue* for your use. We aim to carry all popular products and sizes on a continuous basis. The *Stainless Steel Product Catalogue* generally lists those sizes we carry ex-stock. However, there are some sizes we offer on an indent basis only.

We also carry many products not featured in this particular publication. Please contact Bombay Metal (INDIA) for more information on our comprehensive range of steel products.

Bombay Metal (INDIA) is committed to providing our customers with consistent and reliable service that meets their needs and promotes excellence in systems and a continuous improvement in quality

In practical terms, our role is to formally recognise all aspects of:

- quality in processing, distribution and service
- compliance with product or system specifications or standards
- technical competence of testing or inspecting

- quality of service performance and delivery

This role is to be carried out in a manner sufficient to provide consumers with confidence in the quality of products and services.

GENERAL INFORMATION

Steelbay Metal (INDIA)e is a leading distributor of stainless steel, operating from locations nationwide. We have extensive experience in providing ongoing maintenance support to major corporations, supplying large scale projects, and of course catering to the day-to-day requirements of India's stainless steel fabricators.

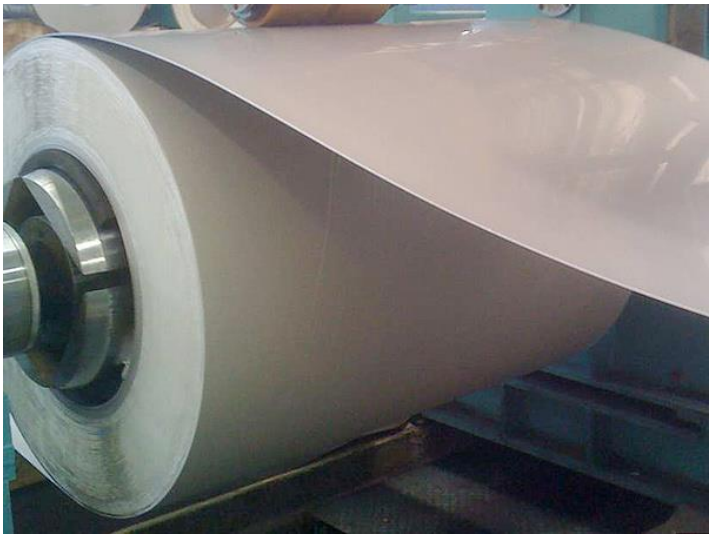
Major end-use industries include:

- Dairy
- Wine and beverage
- Pulp and paper
- Catering equipment
- Architectural/construction
- Meat and food processing
- Water treatment
- Petrochemical

Our extensive range includes the following products, with 304 and 316 austenitic grades available ex-stock, while other grades and products are available on an indent basis:

- Flat products, such as stainless steel coil, sheet and plate
- Bars in round, square, flat, angle and channel
- Square and rectangular tube
- Schedule pipe and fittings
- Hygienic tube and fittings
- Architectural balustrades and fittings
- Mesh and perforated sheet
- Pipe and tube valves
- Coloured, patterned and textured architectural stainless steel sheet
- Fasteners

We also stock a comprehensive range of sundry items.





STAINLESS STEEL FINISHES

Common finishes held in stock are No.1, 2B, BA, No.4, however other finishes can be sourced.

FINISHES

No.1

Hot-rolled, annealed and pickled. Generally used where smoothness of finish is not a design consideration.

2D

A cold-rolled finish obtained from a final annealing and pickling, or a final light cold-roll pass on dull rollers, which may be polished after fabrication.

2B

A bright, moderately reflective cold-rolled finish with the annealed and de-scaled coil receiving a final light roll pass through polished rolls. This is the general purpose cold-rolled finish that can be used as is, or as a preliminary step to polishing. 2B is the most commonly used surface finish in the food and beverage sector.

BA (Bright Annealed)

A mirror-like appearance, it is produced by cold-rolling, then annealing in a controlled atmosphere furnace. Grinding of the surface is then undertaken while the product is at an intermediate gauge, before the product is given a light skin pass through a cold mill over highly polished rolls. The bright finish is often used for architectural applications or uses including appliance trim, cookware, benches and food processing equipment.

No.4

A 'brushed' or 'satin' finish obtained from mechanical polishing with 120-240 grit. Used in dairy and kitchen equipment. Meets international 3A Hygiene Standards.

No.8

A mirror finish for high reflectiveness. Can be used as mirrors or reflectors.

HL (Hairline)

A finish obtained by mechanical polishing with 120-320 grit.

CF (Cold-formed)

A smooth flat reflective finish.

BP (Buff-polished)

Mechanically polished tube using 220-240 grit.

AW (As welded)

Receives no further treatment after forming and welding.

SPECIAL NOTES

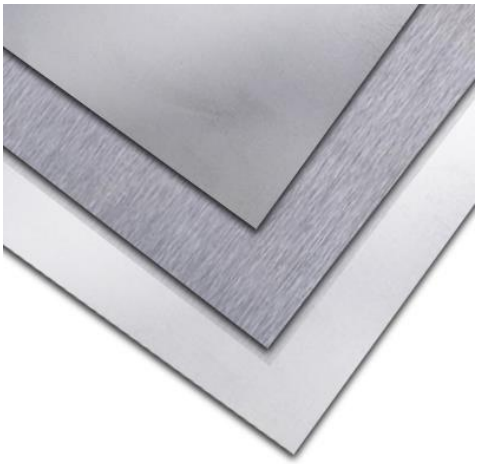
Although every endeavour has been made to have all detail contained in the catalogue correct at the time of printing, we suggest product specification be confirmed

For an up-to-date version of this catalogue please contact our representative. Items identified in this catalogue as 'stocked items' are defined as goods normally held in stock, and are subject to prior sales.

Bombay Metal (INDIA) terms of trade are supplied at the time of opening a trading account and are available upon request.

All weights and dimensions provided in this catalogue are theoretical.

Mill tolerances will affect actual weights (+/-). All weights in this catalogue section weight.



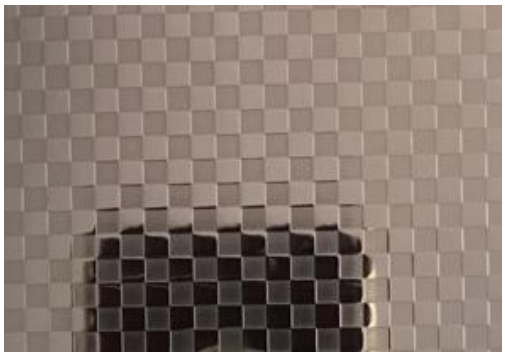
STAINLESS STEEL ARCHITECTURAL/DESIGNER SHEETS

Bombay Metal (INDIA) are manufacturers, exporters & suppliers of Stainless Steel Designer Sheet.



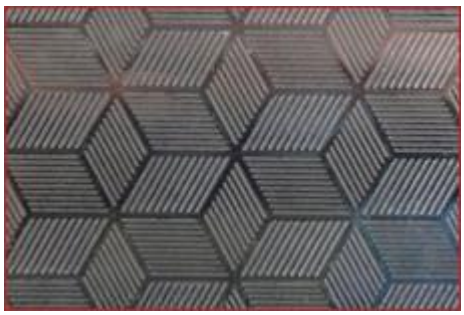
USES OF DESIGNER SHEETS

- ELEVATORS
- ESCALATORS
- MODULAR KITCHENS
- WARDROPES
- DOOR PANELS
- INTERIOR DECORATION
- FURNITURE
- KITCHEN APPLIANCES



TYPES OF FINISHES

- NO.8 MIRROR
- NO.4 SATIN
- HAIRLINE
- SCOTCH BRITE BRUSH (IN VARIOUS COLOURS SUCH AS GOLD, ROSE GOLD, COPPER, BRONZE, BROWN, BLACK
- PVD COLOUR COATED STAINLESS STEEL SHEETS
- ETCHING FINISH DESIGN
- TEXTURED FINISH



STAINLESS STEEL PERFORATED SHEETS

PERFORATED 304 SHEET

THICKNESS MM	WIDTH MM	LENGTH MM	HOLE DIAMETER MM	OPEN AREA %	HOLE CENTRES MM
1.5	1250	2500	3.00	32.6	5.00
1.5	1250	2500	4.76	50.9	6.35
1.5	1250	2500	6.00	40.0	9.00
1.5	1250	2500	8.00	58.0	10.00
1.5	1250	2500	10.00	46.0	14.00
1.5	1250	2500	20.00	63.0	24.00



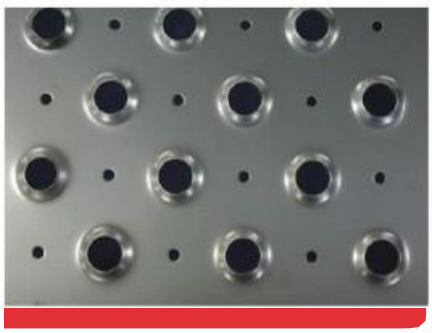






NOTES:

- Additional services: Individually custom designed perforations and patterns can be supplied.
- Perforations also available in No.4 and mirror finish upon request
- Lead time may apply.



TYPES OF STAINLESS STEEL

Stainless Steel is a name given to a group of steel alloys that contain more than 10.5% Chromium. Chromium has a high affinity for oxygen and forms a stable oxide film on the surface of stainless steel.

The film is called the “passive oxide layer” and forms instantaneously in ordinary atmospheres. The film is self-healing and rebuilds when it has been removed. It is this film that gives stainless steel its corrosion resistance.

AUSTENITIC GRADES

When nickel (Ni) is added to stainless steel in sufficient quantities the crystal structure is changed from ferrite to austenite, hence the term austenitic stainless steel. The basic composition of austenitic stainless steel is 18% chromium (Cr) and 8% nickel (Ni). This is called 304 grade, sometimes referred to as 18/8 or 18/10. If additional corrosion resistance is required 2% molybdenum (Mo) is added to form grade 316.

DESCRIPTIONS AND GENERAL USES

303 (INDENT ONLY) Especially developed for machining - especially where it involves extensive machining in automatic screw machines. Sulphur or selenium is added to give excellent free machining and non-seizing properties. As sulphur or selenium is added corrosion resistance is lower than T304. T303 is not recommended for welding. Non-magnetic when annealed but becomes slightly magnetic when cold-worked.

304

The most widely used stainless steel with the best all round performance. Its carbon content is lower and its corrosion resistance after welding is higher than T302. It is less susceptible to intergranular corrosion after welding. Non-magnetic but slightly magnetic when cold worked.

304L

A low carbon stainless steel with general corrosion resistance like T304, but with superior resistance to intergranular corrosion following welding or stress relieving. Highly recommended for parts which are fabricated by welding and which cannot be annealed. Generally limited to temperatures up to 426°C. The physical properties and thermal treatments of T304L are similar but not identical to T304. Non-magnetic when annealed but slightly magnetic when cold-worked.

316

Also known as marine grade stainless steel. T316 has 2-3% molybdenum which improves corrosion resistance. T316 has superior corrosion resistance to other austenitic steels when exposed to many types of chemical corrodents as well as marine environments - T316 also has applications in the chemical, textile, and paper industries. It has better strength and creep resistance at high temperatures than T304 and greater work hardening properties. Non-magnetic but slightly magnetic when cold-worked.

316L

Has lower carbon than T316, with corrosion resistance similar to T316, but superior resistance to intergranular corrosion following welding or stress relieving. It is recommended for parts which cannot be subsequently annealed. Service temperatures up to 426°C. The physical properties and thermal treatments of type 316L are similar but not identical to type 316. Non-magnetic when annealed but slightly magnetic when cold-worked.

MARTENSITIC GRADES

This grade contains 12%-18% chromium and 0.08%-1.00% carbon. The high carbon content allows the stainless steel to respond well to heat treatment to give various mechanical strengths such as hardness. However the carbon is detrimental when welding and care must be taken.

Grades 409, 410, 420 and 431 are typical martensitic grades.

FERRITIC GRADES

These are nickel free. They have varying chromium content of

12%-22% but a lower carbon content than the martensitic grades.

The increased chromium increases corrosion resistance at elevated temperatures, however the lack of mechanical properties due to the fact that it cannot be heat-treated limits its application.

DESCRIPTIONS AND GENERAL USES

430

A corrosion a/nd heat resisting stainless steel with superior corrosion and heat resistance compared to type 410. Type 430 is non hardenable and possesses only mild cold-working properties due to the high chromium content. Its weldability is excellent and does not require subsequent annealing. Magnetic in all conditions. Common uses include builders hardware, domestic appliances (driers, dishwashers) and automotive trim.

DUPLEX STAINLESS STEEL

Duplex stainless steels have a structure of approximately equal amounts of ferrite and austenitie and therefore may be referred to as ferritic-austenitic stainless steel.

The chromium varies from 18%-28% and a nickel content of 4.5% to 8% is insufficient to develop a fully austenitic crystal structure. Most grades contain molybdenum in the 2.5%-4% range, plus a small nitrogen addition which enables both strength and pitting resistance. Common uses include applications such as heat exchanger panels

and tubes, tanks and vessels where high chloride concentrations are present eg sea water cooling, desalination, food pickling plants and aggressive marine waters.

STAINING AND CORROSION OF STAINLESS FITTINGS – PREVENTION IS BETTER THAN CURE



Stainless steel is an incredibly resistant building product but it is not impervious to mild staining or even corrosion in some instances. There are several factors and agents that cause both unsightly staining and more serious metal corrosion. These include exposure to marine salt or other corrosive environments, poor design or installation, surface finish and the grade of stainless steel.

Coastal conditions may be experienced as much as 20km inland from the sea, with airborne salt finding its way onto the surface and into welds and joints of stainless fittings. This salt, as well as dirt, can cause tea staining.

Tea staining is a brown discolouration of the surface. It does not structurally affect the metal but is unsightly. Washing on a regular basis with detergent or soap reduces the chances of staining. Care should be taken with all chemical cleaners and those containing chloride, such as bleach, can potentially cause surface marking on the metal. Avoid steel wool or any carbon steel cleaning tools (such as scrapers) as these may actually cause more corrosion through reaction with the stainless steel.

The design and position of the stainless steel can also impact on its appearance. If water is allowed to pool on the surface, or dirt and dampness collect in corners and hollows the stainless steel is likely to stain. Well ventilated, free-draining installations are best.

316 grade stainless is recommended for marine or corrosive areas as it has a small percentage of molybdenum added, improving resistance to tea staining and corrosion.

304 grade is slightly less corrosion resistant and is used extensively away from the coast. Using a higher polish/grit number can reduce the deposits or contaminants in most instances. All handrails and fittings in this publication are 316 or 304 grade unless otherwise indicated.

CHEMICAL COMPOSITION

Designation/code	%C (min~max)	%Mn (min~max)	%P (min~max)	%S (min~max)	%Si (min~max)	%Cr (mim~max)	%Ni (min~max)	%Mo (min~max)	N PPM (max)	%Others
Austenitic Cr-Mn*										
201	0.150	5.5-7.5	0.060	0.030	1.000	16.00-18.00	3.50-5.50	-	2500	-
201L	0.030	5.5-7.5	0.045	0.030	0.750	16.00 - 18.00	3.50-5.50	-	2500	
201LN	0.030	6.4-7.5	0.045	0.015	0.750	16.00-17.50	4.00-5.00	-	1000-2500	Cu = 1.0 Max.
202	0.150	7.5-10.0	0.060	0.030	1.000	17.00-19.00	4.00-6.00	-	2500	-
204 Cu	0.100	6.5-9.0	0.060	0.010	0.750	16.00-17.50	1.50-3.50		1000-2000	Cu - 2.0-4.0
J4	0.100	8.50-10.0	0.080	0.010	0.750	15.00-16.00	1.00-2.00		2000	Cu = 1.5-2.0
Austenitic Cr-Ni*										
301	0.150	2.000	0.045	0.030	1.000	16.00-18.00	6.00-8.00	-	1000	
301L	0.030	2.000	0.045	0.030	1.000	16.00-18.00	6.00-8.00	-	2000	
304	0.070	2.000	0.045	0.030	0.750	17.50-19.50	8.00-10.50		1000	
304L	0.030	2.000	0.045	0.030	0.750	17.50-19.50	8.00-12.00		1000	-
310	0.250	2.000	0.045	0.030	1.500	24.00-26.00	19.00-22.00			
310S	0.080	2.000	0.045	0.030	1.500	24.00-26.00	19.00-22.00		-	
316	0.080	2.000	0.045	0.030	0.750	16.00-18.00	10.00-14.00	2.00-3.00	1000	
316L	0.030	2.000	0.045	0.030	0.750	16.00-18.00	10.00-14.00	2.00-3.00	1000	
316Ti	0.080	2.000	0.045	0.030	0.750	16.00-18.00	10.00-14.00	2.00-3.00	1000	Ti-5X(C+N) Min., 0.70 Max.
31727	0.030	1.000	0.030	0.030	1.000	17.50-19.00	14.50-16.50	3.80-4.50	1500-2100	Cu- 2.8-4.0
321	0.080	2.000	0.045	0.030	0.750	17.00-19.00	9.00-12.00	-	1000	Ti=5X(C+N) Min., 0.70 Max.
347	0.080	2.000	0.045	0.030	0.750	17.00-19.00	9.00-13.00	-		Nb- 10XC Min., 1.00 Max.

Jindal Designation/code	%C (min~max)	%Mn (min~max)	%P (min~max)	%S (min~max)	%Si (min~max)	%Cr (mim~max)	%Ni (min~max)	%Mo (min~max)	N PPM (max)	%Others
Martensitic										
410	0.08-0.15	1.00	0.04	0.03	1.00	11.50-13.50	0.75 max	-	-	-
420	0.15 min	1.00	0.040	0.030	1.000	12.00-14.00	0.75 max	0.50 max	-	-
Ferritic										
409	0.030	1.000	0.040	0.020	1.000	10.50-11.70	0.50 max			Ti -6X (C+N) Min., 0.5 Max.
409L	0.030	1.000	0.040	0.030	1.000	10.50-11.70	0.50 max	-	300	Ti =6X (C+N) Min., 0.75 Max.
410S	0.080	1.000	0.040	0.030	1.000	11.50-13.50	0.60 max		-	
430	0.120	1.000	0.040	0.030	1.00	16.00-18.00	0.75 max	-		
439	0.030	1.000	0.040	0.030	1.00	17.00-19.00	0.50 max	-	300	Ti-0.20+4X (C+N) Min.,1.10 Max. AJ= 0.15 Max.
Ferritic + Martensitic										
409M	0.030	0.8-1.5	0.030	0.030	1.000	10.80-12.50	1.50 max	-	300	Ti = 0.75 Max.
Duplex (Austenitic+Ferritic)										
2205	0.030	2.000	0.030	0.020	1.000	22.00-23.00	4.50-6.50	3.0-3.50	1400 - 2000	-
2304	0.030	2.500	0.040	0.030	1.000	21.50-24.50	3.00-5.50	0.05-0.60	500-2000	Cu 0.05 Min.-0.60 Max.
31803	0.030	2.000	0.030	0.020	1.000	21.00-23.00	4.50-6.50	2.50-3.50	800-2000	-

Mechanical Properties

Jindal Designation/code	Tensile Strength (MPA)min.	%Yield Strength(MPA)min.	%Elongation(min.)	Hardness (HRB)max.
201	655	310	40	100
202	620	310	40	100
204 Cu	620	310	40	100
J4	650	325	40	100
Austenitic Cr-Mn*				
301	615	205	40	96
301L	550	220	45	100
304	515	205	40	92
304L	485	170	40	92
310	515	205	40	95
310S	515	205	40	95
316	515	205	40	95
316L	485	170	40	95
316Ti	515	205	40	95
317	515	205	35	95
317L	515	205	40	95
321	515	205	40	95
347	515	205	40	95
Martensitic				
410	450	205	20	96
420	690	*	15	96
Martensitic				
409	380	170	20	88
409L	380	170	20	88
410S	415	205	22	89
430	450	205	22	89
43OTi	360	175	22	90
436	360	175	22	90
436L	360	175	22	90
439	415	205	22	89
409M	415	205	22	89
2205	655	450	25	31 (HRC)
2304	600	450	25	32 (HRC)

STAINLESS STEEL ERW AND SEAMLESS ROUND PIPES

DESIGNATION OF DIAMETER		O/D DIA	NOMINAL BORE											
			SCH 5S		SCH 10S		SCH 20S		SCH 40S		SCH 80S		SCH 160S	
(A)	(B)	O/D MM	W.THK	WEIGHT KG/M	W.THK	WEIGHT KG/M	W.THK	WEIGHT KG/M	W.THK	WEIGHT KG/M	W.THK	WEIGHT KG/M	W.THK	WEIGHT KG/M
6	1/8	10.3	1.0	0.23	1.2	0.27	1.5	0.33	1.73	0.37	2.41	0.47	-	
8	¼	13.7	1.2	0.37	1.65	0.49	2.00	0.58	2.24	0.64	3.02	0.80	-	
10	3/8	17.2	1.2	0.48	1.65	0.64	2.00	0.75	2.31	0.85	3.20	1.11	-	
15	½	21.3	1.65	0.80	2.11	1.00	2.5	1.17	2.77	1.27	3.73	1.63	4.75	1.95
20	¾	26.7	1.65	1.03	2.11	1.29	2.5	1.50	2.87	1.70	3.91	2.21	5.56	2.91
25	1	33.4	1.65	1.30	2.77	2.10	3.00	2.26	3.38	2.52	4.55	3.26	6.35	4.26
32	1 ¼	42.2	1.65	1.66	2.77	2.71	3.00	2.92	3.56	3.41	4.85	4.49	6.35	5.65
40	1 ½	48.3	1.65	1.91	2.77	3.13	3.00	3.37	3.68	4.07	5.08	5.45	7.14	7.29
50	2	60.3	1.65	2.40	2.77	3.95	3.5	4.93	3.91	5.47	5.54	7.52	8.74	11.18
65	2 ½	73.0	2.11	3.71	3.05	5.29	3.5	6.03	5.16	8.68	7.01	11.47	9.53	15.00
80	3	88.9	2.11	4.54	3.05	6.49	4.00	8.42	5.49	11.36	7.62	15.36	11.1	21.42
100	4	114.3	2.11	5.87	3.05	8.41	4.5	12.25	6.02	16.17	8.56	22.45	13.49	33.73
125	5	141.3	2.77	9.52	3.40	11.63	5.00	16.90	6.55	21.89	9.53	31.14	15.88	49.39
150	6	168.3	2.77	11.37	3.40	13.90	5.5	22.21	7.11	28.42	10.97	42.80	18.25	67.91
200	8	219.1	2.77	14.86	3.76	20.08	6.35	33.50	8.18	42.79	12.7	65.01	23.01	111.90
250	10	273.1	3.40	22.74	4.19	27.34	6.35	42.01	9.27	60.65	12.7	82.02	28.58	173.31
300	12	323.9	3.96	31.42	4.57	36.19	6.35	50.01	9.53	74.30	12.7	98.02	33.32	240.12
350	14	355.6	3.96	34.53	4.78	41.59	7.92	68.29	11.13	95.08	19.05	159.00	35.71	283.30
400	16	406.4	4.19	41.79	4.78	47.61	7.92	78.27	12.7	124.00	21.41	204.42	40.46	367.19
450	18	457.2	4.19	47.07	4.78	53.63	7.92	88.25	14.27	156.75	23.8	255.81	45.71	466.47
500	20	508.0	4.78	59.65	5.54	69.03	9.53	117.81	15.09	184.46	26.19	312.94	49.99	567.82
600	24	609.6	5.54	82.99	6.35	95.00	9.53	141.82	17.48	256.69	30.96	444.28	59.54	812.21

STAINLESS STEEL SQUARE PIPES

Square Stainless Steel Tubing - Sizes & Weights per foot								
202/304/304L/316/316L/409 Square Tubing								
Gauge		18	16	14	11	7	1/4	3/8
Inches		0.049	0.065	0.083	0.120	0.180	0.250	0.375
1/2		0.30	0.39					
5/8		0.38	0.40					
3/4		0.50	65.00	0.81	1.13			
1		0.63	0.83	1.03	1.45	2.17		
1-1/4		0.82	1.08	1.37	1.93	2.99		
1-1/2		0.97	1.27	1.61	2.26	3.63	4.41	
1-3/4		1.13	1.49	1.88	2.66	3.75		
2		1.30	1.69	2.14	3.06	4.46	6.01	
2-1/2				2.72	3.88	5.68	7.67	
3				3.29	4.97	6.90	9.35	
3-1/2					5.67	8.06	10.89	
4					6.26	9.27	12.68	18.52
5					8.02	11.90	16.35	23.53
6					9.46	14.07	18.77	28.53
8							26.03	38.55
All material offer as mill finish, polished 180 grit or polished 320 grit								

NOTES

- ALL PIPES AVAILABLE IN ALL GRADES BASED ON REQUIREMENT
- OTHER SIZES AVAILABLE BASED ON REQUIREMENT

CONTACT DETAILS

MUMBAI OFFICE

Bombay Metal (INDIA)

ADDRESS – 40,2ND CARPENTER STREET

1ST FLOOR, MUMBAI – 400004

CONTACT NO – 9004404246



HYDERABAD OFFICE

5-1-527/2, HILL STREET, RANI GUNJ

SECUNDERABAD – 500003

TELEPHONE – 8591048237

FACTORY (MANUFACTURING OF PIPES

DIVISION) SURVEY NO – 62/1A,

BAHADURPALLY, QUTUBULLAPUR (MANDAL)

RANGA REDDY DISTRICT

HYDERABAD – 500043

FACTORY CONTACT NUMBER - 9949003310



SALES MANAGER

MR RONAK MEHTA

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