

Stainless Steel

310 / 310S / 310H

Grade 310 (UNS S31000) and its various subgrades combine excellent high temperature properties with good ductility and weldability.

Grade 310H (UNS 531009) has a carbon content restricted to exclude the lower end of the 310 range, so is the grade of choice for high temperature applications.

Grade 310S (UNS S31008) is used when the application environment involves moist corrosives in a temperature range lower than that which is normally considered "high temperature" service. The lower carbon content of 310S does reduce its high temperature strength compared to 310H.

"Dual Certification"

310H and 310S are often produced in "Dual Certified" form - mainly in plate and pipe. These items have chemical and mechanical properties complying with both 310H and 310S specifications. Product complying with 310 only or dual certified 310 and 310S may have a carbon content below 0.04% which will not be acceptable for some high temperature applications.

Typical Applications

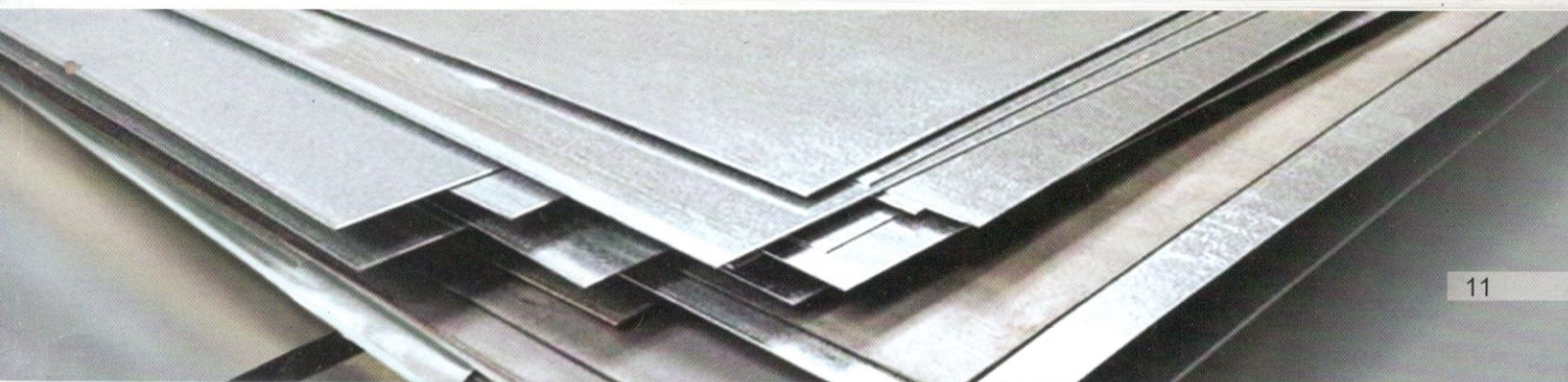
Furnace parts. Oil burner parts. Carburising boxes. Heat Treatment baskets and jigs. Heat exchangers. Welding filler wire and electrodes.

Compositions Specification % (single values are maximum)

Grade	-	C	Mn	Si	P	S	Cr	Ni
310	min.	-	-	-	-	-	24.0	19.0
	max.	0.25	2.00	1.50	0.045	0.030	26.0	22.0
310S	min.	-	-	-	-	-	24.0	19.0
	max.	0.08	2.00	1.50	0.045	0.030	26.0	22.0
310H	min.	0.04	-	-	-	-	24.0	19.0
	max.	0.10	2.00	0.75	0.045	0.030	26.0	22.0

Mechanical Property Specification

Grade	Tensile Strength (MPa) min	Yield Strength 0.2% Proof (MPa) min	Elongation (at 50mm) min	Hardness	
				Rockwell B (HR B) max	Brinell (HB) max
310	515	205	40	95	2.17
310S	515	205	40	95	2.17
310H	515	205	40	95	2.17



Stainless Steel

17 - 4 PH

Type 17-4 PH Stainless steel is the most widely used of all of the precipitation- hardening stainless steels. Its valuable combination of properties gives designers opportunities to add reliability to their products while simplifying fabrication and often reducing costs. Type 17-4 PH is a martensitic precipitation-hardening stainless steel that provides an outstanding combination of high strength, good corrosion resistance, and good mechanical properties at temperatures up to 600° F (316°C). Its unique combination of properties make this alloy an effective solution to many design and production problems.

Chemical Composition :

	Cr	Mn	Si	Ni	P	S	C	Cu	cb+Ta
MIN	15	-	-	3	-	-	-	3	0.15
Max	17.5	1	1	5	0.04	0.03	0.07	3.5	0.45

Resistance to Corrosion :

Type 17-4 PH stainless steel has excellent resistance. It withstand corrosive attack better than any of the standard hardenable stainless steels and is comparable to type 304 in most media. This has been tested in a wide variety of corrosive conditions in the petrochemical, petroleum, paper, dairy and food processing industries, and in applications such as boat shafting.

Specifications Equivalents :

ASME	:	SA564, SA693, SA705, Type 630.
AMS	:	5604, 5604, 5622, 5643, 5825.
ASTM	:	A564, A693, A705, Type 360
UNS	:	S17400.
W. Nr / EN	:	1.4548

Mechanical Properties :

Typical Mechanical Properties of Sheets and Strip - Cold Flattened (Annealed)

UTS (Tensile) Ksi (Mpa)	.02% Yield Strength Ksi (Mpa)	Elongation % in 2" (51mm)	Hardness Rockwell C -
160	145	5	35
(1103)	(1000)		

Type 17- 4 PH stainless steel has excellent mechanical properties. For applications requiring high strength and hardness as well as corrosion resistance, Type 17- 4 PH stainless is an outstanding choice, and it is more cost effective than many high nickel non-ferrous alloys.

General Characteristics :

- Excellent resistance to corrosion
- Provide toughness in both base metals and welds.
- Well suited to applications that require ease of fabrication and then the addition of strength / hardness for improved reliability

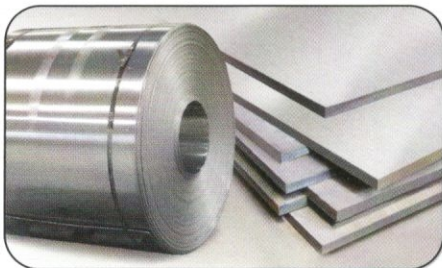
Applications :

- Aerospace applications
- Chemical processing equipment
- Oil and Petroleum refining equipment
- Food processing equipment
- General metalworking

Titanium

Grade - 2 & Grade - 5

Nitrogen	Carbon	Hydrogen	Iron	Oxygen	Aluminium	Vanadium	Residuals / Each	Residuals / Total	Titanium
Grade - 2 (3.7035) % max									
0.003	0.08	0.015	0.30	0.25	6- min	-	0.1	0.4	Rem
Grade - 5 (3.7055) % max									
0.03	0.10	0.015	0.30	0.25	-	4 - min	0.1	0.4	Rem



Sheet / Plate

Thickness : 0.5t, 0.8t, 1.0t, 1.2t,
1.5t, 2.0t, 3.0t, 5.0t,
Max Width : 1229 mm



Flange

Thickness : min, 5.0t, max, 50t
Size : 1/2" to 12"



Weld Wire

Thickness : 1.0mm, 1.5mm, 2.0mm, 3.0mm
Length : 1500 mm.



Round Bar

Size : 4mm, 5mm, 6mm, 8mm, 10mm,
12mm, 16mm, 20mm, up to 100mm.



Fastener

Type : Hex Bolt, Counter Sunk,
Hex Nut, Plain Washer.



Mesh

Size : 1m x 1m, Opening, 5mm x 12mm.
As per Drawing

High Nickel Alloy Stock Profile

Alloy C276

Hastelloy C276
Specification

ASTM B574 NACE MRO175
ASTM SB574

Density - 8.89

Has outstanding durability under reductive and oxidative environment. Has good corrosion resistance at weld hested srea and also shows outstanding resistance to pitting and stress corrosion.

Major Chemical Composition (%)

Ni	Cr	Mo	Cu
55.0	16.0	16.0	-
Fe	-	etc	-
6.0	-	W 4.0	-

ST

Typical Mechanical Property (RT)	Tensile Strength 794 (MPa)	-	-	-
	0.2% Yield Strength (MPa)	402	-	-
	Elongation (%)	60	-	-
	Hardness (HB)	195	-	-

Alloy 20

Carpenter 20Cb3
Specification

ASTM B473 NACE MRO175
ASTM SB473

Density - 8.08

Shows outstanding corrosion resistance to reductive acid, especially to sulfuric acid and outstanding mechanical properties, and is easily processable.

Major Chemical Composition (%)

Ni	Cr	Mo	Cu
35.0	20.0	2.5	3.5
Fe	-	etc	-
37.0	-	Nb + Ta 1	-

An

Typical Mechanical Property (RT)	Tensile Strength794 (MPa)	617	-	-
	0.2% Yield Strength (MPa)	274	-	-
	Elongation (%)	50	-	-
	Hardness (HB)	184	-	-

Alloy 600

Inconel 600
Specification

ASTM B166 AMS 5665
ASTM SB166 NACE MRO175

Density - 8.42

High-Ni and high Cr content alloy with outstanding oxidation resistance and corrosion resistance at high temperatures up to 1180C

Major Chemical Composition (%)

Ni	Cr	Mo	Cu
76.0	15.5	-	-
Fe	-	etc	-
8.0	-	-	-

HW CW An

Typical Mechanical Property (RT)	Tensile Strength 794 (MPa)	706	882	608
	0.2% Yield Strength (MPa)	431	706	284
	Elongation (%)	38	20	45
	Hardness (HB)	100	205	145

Alloy 625

Inconel 625
Specification

ASTM B446 AMS 5666
ASTM SB446 NACE MRO175

Density - 8.44

Shows outstanding corrosion resistance, high strength, tenacity, oxidation resistance and fatigue strength at temperatures from extremely low to as high as 980C

Major Chemical Composition (%)

Ni	Cr	Mo	Cu
61.0	21.5	9.0	-
Fe	-	etc	-
2.5	-	Nb + Ta3.7	-

HW An

Typical Mechanical Property (RT)	Tensile Strength794 (MPa)	980	931	-
	0.2% Yield Strength (MPa)	588	539	-
	Elongation (%)	45	45	-
	Hardness (HB)	210	180	-

Alloy 200 / 201

Nickel 200 / 201
Specification

ASTM B160 ASTM SB160

Density - 8.89

Unalloyed wrought Ni having good mechanical properties, outstanding corrosion resistance, and useful thermal and electrical conductivities Suitable for use at temperature of 315C or higher, compared to Alloy 200.

Major Chemical Composition (%)

Ni	Cr	Mo	Cu
99.0	-	-	-
-	-	etc	-
-	-	Co.01	-
H W C W A n			

Typical Mechanical Property (RT)	Tensile Strength 794 (MPa)	372	539	392
	0.2% Yield Strength (MPa)	117	441	117
	Elongation (%)	50	20	50
	Hardness (HB)	90	160	90

Alloy 400

Monal 400
Specification

ASTM B164 NACE MR0175
ASTM SB164

Density - 8.83

Ni-Cu Alloy with good weldability and good workability, and outstanding corrosion resistance in a wide range of marine and chemical environments.

Major Chemical Composition (%)

Ni	Cr	Mo	Cu
66.5	-	-	31.5
Fe	-	etc	-
1.2	-	-	-
H W C W / D C A n			

Typical Mechanical Property (RT)	Tensile Strength 794 (MPa)	637	686	559
	0.2% Yield Strength (MPa)	490	539	255
	Elongation (%)	45	30	48
	Hardness (HB)	190	110	135

ALLOY 800 / H / HT

Incoloy 800, 800H and 800HT
Specification

ASTM B 409, B 408, B 407, B 564

Density - 7.94

Incoloy 800, 800H, and 800HT are nickel-iron-chromium alloys with good strength and excellent resistance to oxidation and carburization in high-temperature exposure.

It is primarily used in applications with temperatures up to 1100° F, where alloys 800H and 800HT are normally used in temperatures above 1100° F where resistance to creep and rupture is required.

Major Chemical Composition (%)

Ni	Cr	Ma	Si
35	19-23	1-5	1
Co	Ti	AL	C
0.75	0.15-0.6	0.15-0.6	0.1

Typical Mechanical Property (RT)	Tensile Strength 794 (MPa)	600	-	-
	0.2% Yield Strength (MPa)	295	-	-
	Elongation (%)	44	-	-
	Hardness (Brinell)	-	-	-

254 Mo

Alloy 254 SMO
Specification

ASTM A813, ASTM A469, ASTM A269,
ASTM A240, ASTM A182 (F44)

Density - 8.06

254 SMO™ is a very high end austenitic stainless steel. It is designed with a combination of impact toughness resistance to chloride stress corrosion cracking, and pitting and crevice corrosion with strength that is twice that of the stainless steel 300 series.

Major Chemical Composition (%)

Ni	Cr	Mo	N
18	20	6.1	0.20
C	-	-	-
0.010	-	-	-

Typical Mechanical Property (RT)	Tensile Strength 794 (MPa)	680	-	-
	0.2% Yield Strength (MPa)	300	-	-
	Elongation (%)	50 %	-	-
	Hardness (Brinell)	210	-	-

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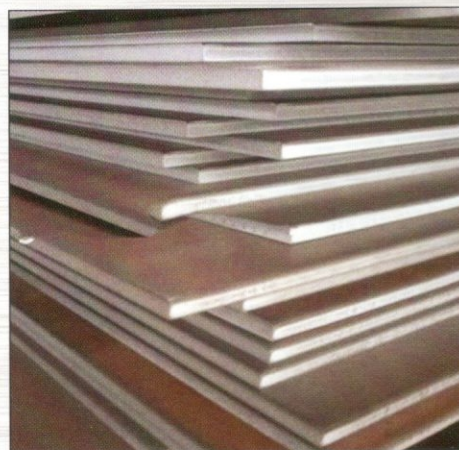
WEAR RESISTENT

Abrasion Resistent Plates

EXTRA HIGH STRENGTH

Applications for these plates : Dumper bodies, containers, crushes, conveyors, buckets, knives, gears, dump trucks, lorries, bulldozers, slurry pipe systems, etc.

Name	Its Manufacture	Country
Sumihard / Abrex	Sumitomo & Nippon steel	Japan
Hardox	SSAB	Sweden
SWEBOR	SWEBOR STAL	SWEDEN
Everhard	JFE Steel	Japan
Raex	Rukki	Finland
Fora	Indu Steel	Belgium
XAR	Thyssenkrup Metal	Germany
Abrazo	Corus	Europe
Dillidur	Dillinger	Germany
Quard	Duferco	Belgium



Abrasion & Wear Resistant Steel Plate

Chemical Properties

Grade	C max max	Mn	P max	S max max	Si	Cr max	I max	Mo max	B max	V	Other Element
Hardox 400	0.20	1.60	0.025	-	0.70	0.80	1.00	0.80	0.004	-	-
Sumihard k400	0.17	1.25	0.012	0.003	0.29	0.02	0.02	0.10	-	-	-
Swebor 400	0.18	1.2	0.02	0.01	0.25	0.2	-	0.60	0.002	-	-
Fora 400	0.20	1.60	0.020	0.003	0.01	1.00	0.50	0.20	0.003	-	-
Raex 400	0.20	1.70	0.030	0.015	0.70	1.50	0.40	0.50	0.004	-	Ai=.060 max
Dillidur 400	0.20	1.80	0.025	0.01	0.50	1.50	0.80	0.50	0.005	0.08	Nb=.05 max
JFE EH360LE	0.17	1.60	0.020	0.01	0.55	0.40	-	0.35	0.004	0.02	-
Quard 400	0.16	1.60	0.025	0.01	0.70	0.50	0.25	0.25	0.005	-	-

Physical Properties

Grade	Origin	Tensile Mpa	Mpa	Elongation in 2 inches (min) %	Brinell
Hardox 400	Sweden	1250	1000	10	360-440
Sumihard / Abrex k400	Japan	1322	1075	10	360-440
Swebor 400	Sweden	1250	1050	10	min 400
Fora 400	Belgium	1350	1100	13	360-440
Raex 400	Finland	1200	1000	10	360-420
Xar 400	Germany	1250	1020	12	360-440
Dillidur 400	Germany	1200	1000	12	370-430
JFE EH360LE	Japan	1308	1050	10	361-440
Quard 400	Belgium	1250	1050	10	370-430

High Strength Structural Steel Plates

Chemical Properties

Grade	C max	Mn max	P max	S max	SI max	Cr max	NI max	Mo max	B max	V	Other
DOMEX 700 MC	0.12	2.1	0.025	0.01	0.1	-	-	-	-	-	V+Nb+Ti=0.22%
NAXTRA 700	0.1	2	0.2	0.01	0.2	-	-	-	-	-	Ai:-0.015
OPTIM700	0.2	1.7	0.2	0.01	0.8	1.5	-	0.7	-	-	Cu=.50
WEL DOX 700	0.2	1.6	0.2	0.01	0.6	0.7	2	0.7	0.005	0.04	Nb=.04,V=.09, N=.015,Cu=.30
JFE 780 LE	0.2	1.4	0.025	0.015	0.4	0.2	-	0.15	0.005	-	V=.08

Physical Properties

Grade	Tensile Mpa	Yield Strength Mpa	Elongation in 2 Inches (min)%
DOMEX 700 MC	750-950	700	12
NAXTRA 700	710-940	630-690	15
OPTIM700	710-940	690	14
WEL DOX 700	780-930	700	18
JFE 780 LE	685	780-930	16

Sailma High Strength Micro Alloy Structural Steel (semi killed)

Chemical Composition

Grade	C% Max	Min% Max	S% Max	P% Max	Nb+V+Ti% Max
SAILMA300	0.25	1.50	0.055	0.055	0.20
SAILMA300HI	0.20	1.50	0.040	0.040	0.20
SAILMA 350	0.25	1.50	0.040	0.040	0.20
SAILMA350HI	0.20	1.50	0.040	0.040	0.20
SAILMA410	0.25	1.50	0.040	0.040	0.20
6AILMA410H1	0.20	1.50	0.040	0.040	0.20
SAILMA450	0.25	1.50	0.040	0.040	0.20
SAILMA450HI	0.20	1.50	0.040	0.040	0.20

Mechanical Properties

Grade	UTS (MPa)	YS (Mpa) Min	El. % Min 5.65 So	IMPACT CHARPYV 0°C-20°C Joules (Min)		Bend Test
SAILMA300	440-560	300	20	-	-	3T
SAILMA300HI	440-560	300	21	40	-	
SAILMA350	490-610	350	20	-	-	3T
SAILMA350HI	490-610	350	21	40	30	3T
SAILMA410	510-660	410	19	-	-	3T
SAILMA410HI	540-660	410	20	35	25	3T
SAILMA450	570-720	450	18	-	-	3T
SAILMA 450HI	570-720	450	19	30	20	3T



Available Sizes :- 2mm, 2.5mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm, 12mm, 15mm, 16mm, 20mm, 25mm, 30mm, 32mm, 40mm, 45mm, 50mm upto 130mm

Dimensions :- Width : 1500mm / 2000mm / 2500 mm / 3000mm | Length : 6000mm / 8000mm

We are directly Importer of the above mention Grades and Brands.

Disclaimer :- All the, above-mentioned brands and grades are the Registered Trade mark of there respective companies.
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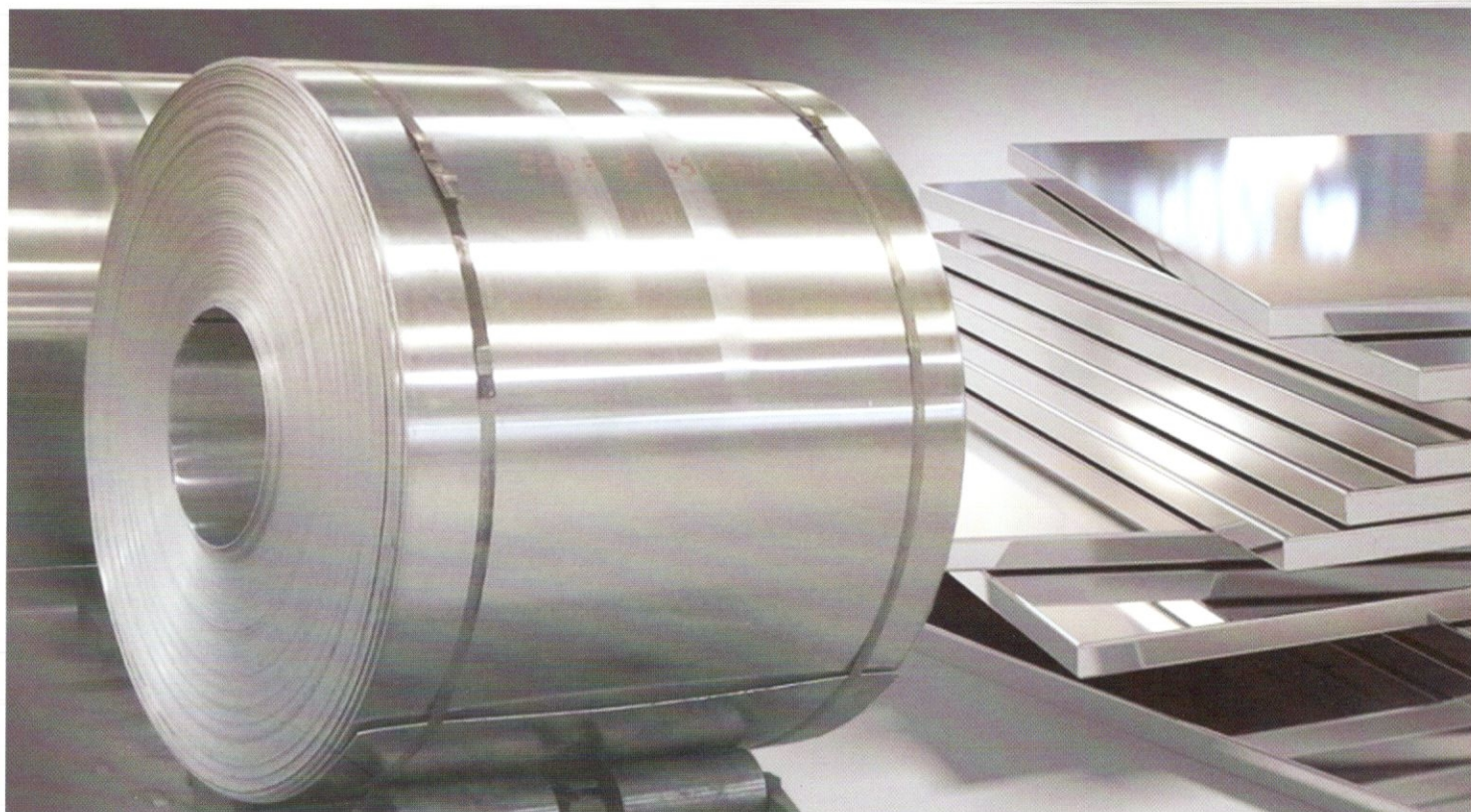
Alloy Steel Plates in

**SA 387 GR 11 / SA 387 GR 22 / SA 387 GR 91
SA 387 GR 12 / SA 387 GR 5 / 16MO3.**

In Range of

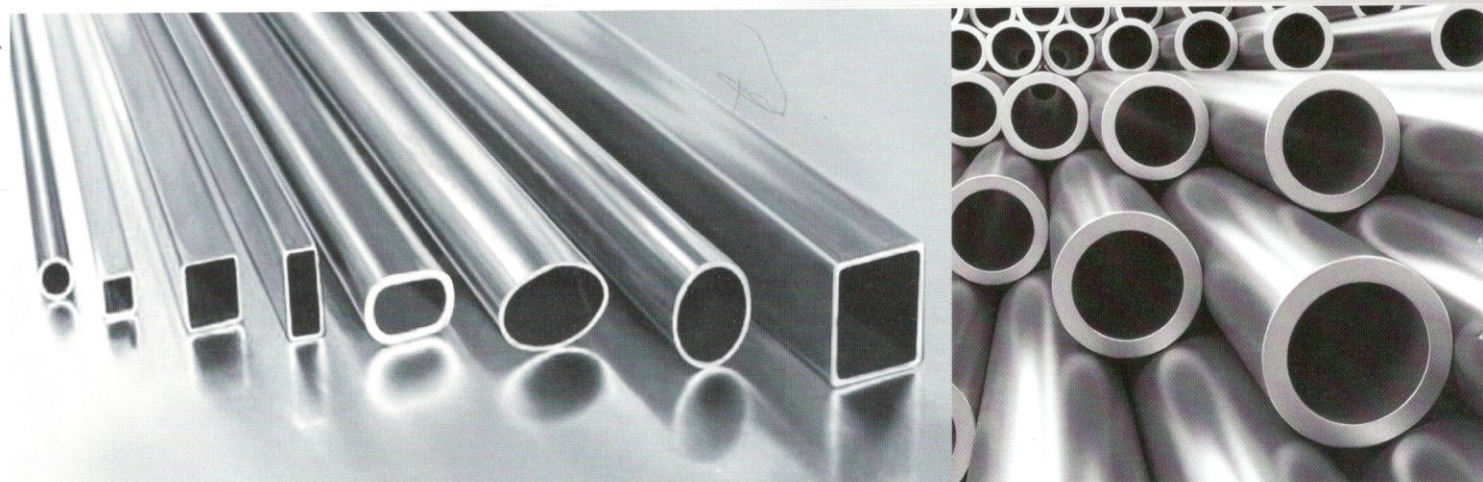
1250 mm to 2500 mm Width.

Sheet / Plate / Coil



Range	:- 0.5 to 5 mm Thick in Sheet, Strip & Coil etc.
	:- 5 mm to 150 mm + Thk in Various Size in Coil / Sheet / Plate.
Stainless Steel	:- ASTM A-240 - TP 304, 304H, 304L, 316, 316H, 316L, 316Ti, 309, 310, 317L, 321, 347, 409, 410, 420, 430, 446, 904L, 202, 17 4ph etc.
Duplex Steel	:- 2205, 31803, 32750, 32760, 2101, 2304.
Nickel Alloy	:- Hastelloy, Nickel, Monel , Inconel , Alloy 20, Cupro Nickel, Copper, etc.
Carbon Steel	:- IS 2062, A36.
Boiler Quality	:- ASTM 516 Gr.70.
Finish	:- 2B, 2D, HR, CR, BA (No. 8 & No. 4), Satin (Matt with Plastic Coated).
Form	:- Coils, Foils, Rolls, Plain Sheet, Shim Sheet, Perforated Sheet, Chequered Plate, Strip, Flats, Blank (Circle), Ring (Flange) etc.
Manufacturing	:- Perforated Sheet.
Test Certificate	:- MTC, Lab.TC from Govt. App. Lab. with Third Party Inspection.

Pipes & Tubes



PIPES

Range	:- 1/8 NB To 1200 NB in Sch. 5, 10, 20, 30, 40, 60, 80, 100, 120, 140, 160, XXS.
Stainless Steel	:- ASTM A312, A358 - TP 304, 316, 309, 310, 317L, 321, 347, 904 L etc.
Duplex Steel	:- 2205, 31803, 32750, 32760, 2101, 2304.
Carbon Steel	:- ASTM A-106 Gr. B, ASTM A 53, API 5L.
Alloy Steel	:- ASTM A 335- P5, P9, P11, P12, P21, P22 & P91 (with IBR Test Certificate)
Nickel Alloy	:- Hastelloy, Nickel, Monel, Inconel, Alloy 20 etc.
Low Temperature	:- ASTM - 333 Gr. 6.
Form	:- Round, Square, Rectangle, Hydraulic, etc.
Test Certificate	:- MTC, IBR TC, Lab. TC from Govt. App. Lab. with Third Party Inspection.
Specialize	:- IBR Pipes, Fabricated Pipes (with Radiography) & Odd size etc.

TUBES

Range	:- 1/4" OD to 12" OD in Gauge : 25 Swg. to 10 Swg.
Stainless Steel	:- ASTM A-213 & A-249-TP 304, H, L, 316, 316L, 309, 310, 317L, 321, 347, 904, L 202.
Carbon Steel Tube	:- BS 3059 Gr. 360 / 440, SA, 179, SA / ASTM A 210 Gr. A 1.
Alloy Steel Tube	:- ASTM A 213 - T-1 1, T-12, T-22, T-5, T-9 etc.
Nickel Alloy	:- Hastelloy, Nickel, Monel, Inconel, Alloy 20 etc.
Other Pipes & Tubes	:- ERW / CDW Boiler Tubes, Air Heater Tubes & Cold Drawn Seamless Tubes.
Form	:- Round, Square, Rectangle,
Test Certificate	:- MTC, IBR TC, Lab. TC from Govt. App. Lab. with Third Party Inspection.