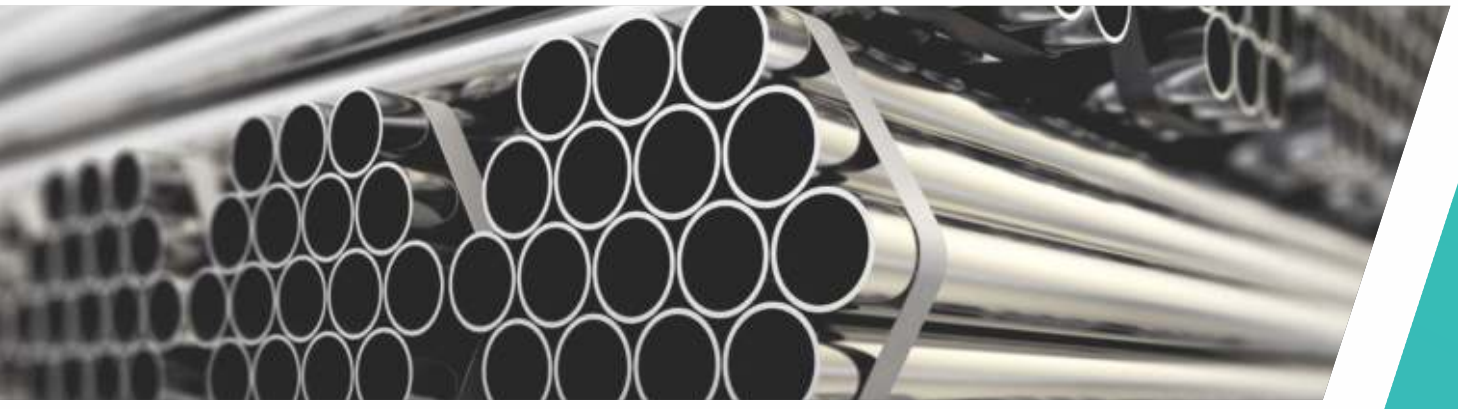
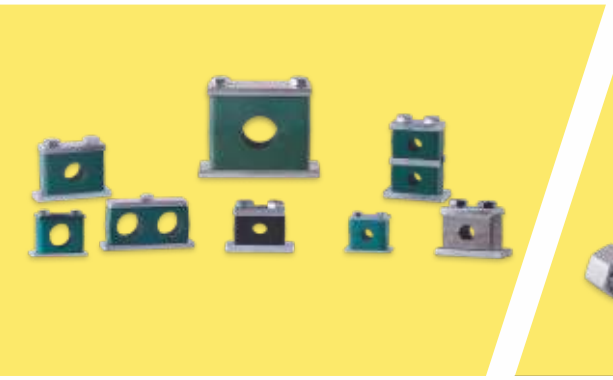
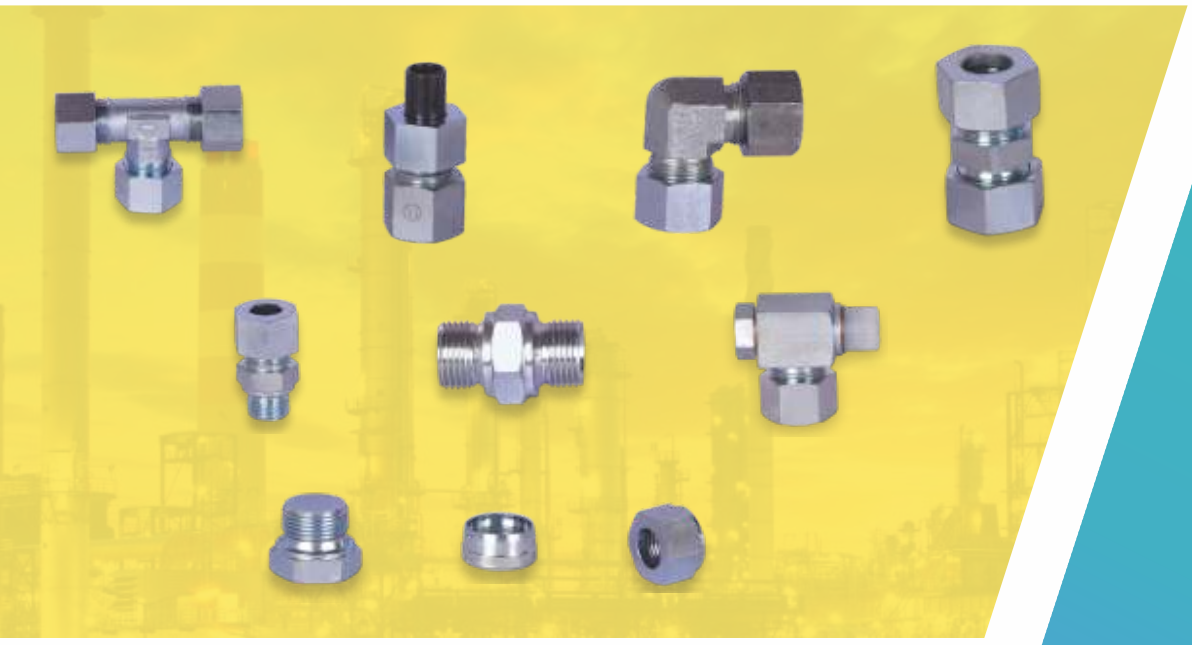
MAHAVIR HYDRAULICS PVT. LTD.

"MHPL Striving To Build Stronger Relations Globally"

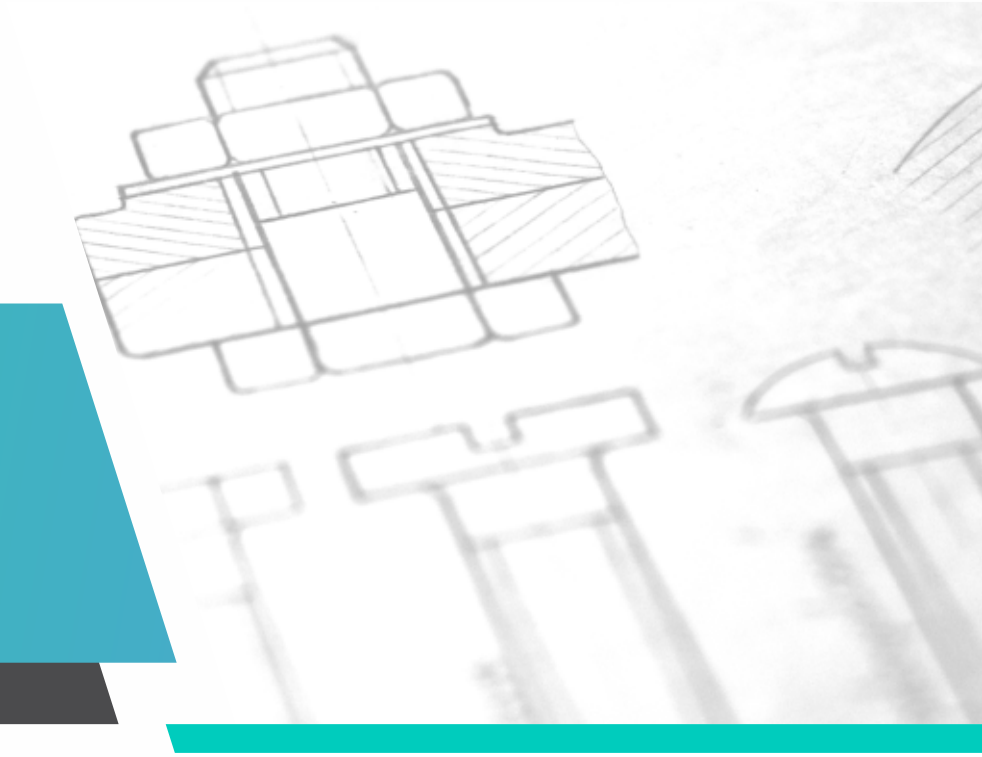






MS Seamless Tubes

ABOUT US



Mahavir Hydraulics Private Limited (MHPL) is a family owned business started by the ZAVERI family, based in financial capital of India, Mumbai. Since inception, the company is acting as a channel partner to M/s. Gandhi Special Tubes Ltd, a company manufacturing PRECISION COLD DRAWN SEAMLESS TUBES having its plant setup in technical collaboration with Benteler AG, Germany.

With the increase in the demography of its customers, MHPL started increasing its product base with the aim to provide an all-inclusive solution to its customers and introduced STAINLESS STEEL TUBES, DOWTY GEAR PUMPS, POLYHYDRON HYDRAULIC VALVES, PIPE CLAMPS and other HYDRAULIC ACCESSORIES to its product catalogue.

By earning a long and enviable record in serving its customers with quality products, MHPL started manufacturing of HYDRAULIC TUBE FITTINGS and HYDRAULIC HOSE FITTINGS to cater to the ever-growing demand of various industries. MHPL manufactures various tube fittings and hose fittings including parts of special requirements in its CNC enabled plant that ensures efficiency, consistency and finishing of the highest quality. The fittings are manufactured in CS and SS material. MHPL also undertakes a 'VALUE ADDED' service in which MHPL manufactures custom made fittings as per the special requirements and drawings of the customers from various industries. MHPL has also set up a hose assembling unit by installing a Uniflex crimping (press) machine, the first in India with crimping capacity of up to 10 inches.

MHPL also has an in-house pressure testing facility that can test up to 700 BAR in static and 500 BAR in impulse pressure.

In 2011, Semperit, Austria, with a history dating back to 1824, introduced its products in India and MHPL was one of the first channel partners to one of the world's leading rubber hose manufacturer. The partnership has since then only grown with MHPL remaining as one of the leading suppliers of SEMPERIT RUBBER HOSES in the country.

OUR VISION

To become an internationally renowned brand in hydraulics synonymous to our products

OUR MISSION

To engage with the companies to develop a long term strategic alliance in India and Overseas

OUR GOAL

To provide best quality products and services and build an environment of understanding and trust

MS SEAMLESS TUBES

Tube Selection and Sizing

Proper Tube Selection Depends on Several Criteria:

Pressure: The Operating pressure of the system is a factor in determining the material and wal thickness of tube to be used. General recommendations are as shown below.

Velocity and Flow: The quantity of fluid that must pass through the line in a given period of time is a major factor in determining the inside diamtere of tubing to be used.

Pressure Drops: Inside the tubes.

Corrosion Conditions: Proper tubing material and size depend also on corrosion conditions and various operating requirements of the system.

GENERAL RECOMMENDATIONS ON SEAMLESS TUBES FOR HYDRAULIC PRESSURE APPLICATION
Tolerance acc. to DIN 2391, part 1 / En10305 | Material St. 37.4 / P235TR2 (Fully Aluminium Killed Steel)

dia Tube Ø mm	Tolerance	wall thickness mm	dia Tube I.D. mm	Design pressure bar DIN 2413 CASE-I	CASE-II	Burst Pressure bar	Weight Kg./m
*4		0.50	3.00	313	273	1160	0.047
4	± 0.08	0.75	2.50	409	393	1820	0.063
4		1.00	2.00	627	500	2700	0.074
5	± 0.08	1.00	3.00	501	416	2120	0.099
6		0.75	4.50	333	288	1150	0.103
*6		1.00	4.00	444	372	1650	0.123
*6	± 0.08	1.50	3.00	666	526	2550	0.166
6		2.00	2.00	692	662	3500	0.197
6		2.25	1.50	757	725	3500	0.208
*8		1.00	6.00	333	288	1175	0.173
*8	± 0.08	1.50	5.00	499	412	1925	0.240
8		2.00	4.00	666	526	2500	0.296
8		2.50	3.00	658	630	2650	0.339
*10		1.00	8.00	282	248	900	0.222
*10		1.50	7.00	423	357	1450	0.314
*10	± 0.08	2.00	6.00	564	458	2025	0.395
10		2.50	5.00	705	551	2657	0.462
10		3.00	4.00	666	638	-	0.518
*12		1.00	10.00	235	209	750	0.271
*12		1.50	9.00	353	303	1150	0.388
*12	± 0.08	2.00	8.00	470	391	1600	0.493
12		2.50	7.00	588	474	2025	0.586
12		3.00	6.00	705	551	2600	0.666
12		3.50	5.00	651	624	-	0.734
14		1.00	12.00	201	182	620	0.321
14		1.50	11.00	302	265	940	0.462
14		2.00	10.00	403	343	1340	0.592
14	± 0.08	2.50	9.00	434	417	1760	0.709
14		3.00	8.00	507	487	2400	0.814
14		3.50	7.00	576	553	3220	0.906
14		4.00	6.00	641	313	-	0.986
15		1.00	13.00	188	170	590	0.345
*15		1.50	12.00	282	248	980	0.499
15	± 0.08	2.00	11.00	376	321	1250	0.641
15		2.50	10.00	409	393	1690	0.771
15		3.00	9.00	564	458	2120	0.888
16		1.00	14.00	176	160	575	0.370
16		1.50	13.00	264	233	850	0.536
*16	± 0.08	2.00	12.00	353	303	1175	0.691
*16		2.50	11.00	441	370	1500	0.832
16		3.00	10.00	529	433	1850	0.962
18		1.00	16.00	157	143	450	0.419
*18		1.50	15.00	235	209	700	0.610
*18	± 0.08	2.00	14.00	313	273	975	0.789
18		2.50	13.00	392	333	1300	0.956
18		3.00	12.00	470	391	1575	1.111

dia Tube Ø mm	Tolerance	wall thickness mm	dia Tube I.D. mm	Design pressure bar DIN 2413 CASE-I	CASE-II	Burst Pressure bar	Weight Kg./m
20		1.5	17	212	190	675	0.684
*20		2	16	282	248	900	0.888
*20	± 0.08	2.5	15	353	303	1100	1.079
*20		3	14	423	357	1400	1.258
20		3.5	13	494	408	1650	1.424
20		4	12	564	458	2000	1.578
22		1	20	128	118	550	0.518
*22		1.5	19	192	174	775	0.758
*22	± 0.08	2	18	256	227	1025	0.986
22		2.5	17	320	278	1175	1.202
22		3	16	385	328	-	1.406
25		2	21	226	201	670	1.134
*25		2.5	20	282	248	920	1.387
*25	± 0.08	3	19	338	292	1050	1.628
*25		4	17	394	378	1520	2.072
25		4.5	16	451	418	1780	2.275
25		5	15	508	460	2120	2.466
28		1.5	25	151	138	450	0.980
*28		2	24	201	181	620	1.282
28	± 0.08	2.5	23	252	223	770	1.572
*28		3	22	302	264	920	1.850
28		4	20	403	343	1060	2.368
28		5	18	434	417	1320	2.836
30		2	26	188	170	620	1.381
30		2.5	25	235	209	770	1.695
*30	± 0.08	3	24	282	248	920	1.998
*30		4	22	376	321	1250	2.565
30		5	20	470	391	1580	3.038
35		2	31	161	147	470	1.628
35		2.5	30	201	181	620	2.004
*35	± 0.15	3	29	242	215	720	2.367
35		4	27	322	280	960	3.058
35		5	25	403	343	1060	3.699
35		6	23	419	403	1270	4.291
38		2.5	33	186	168	550	2.189
38		3	32	223	199	660	2.589
*38	± 0.15	4	30	297	260	970	3.354
*38		5	28	371	318	1350	4.069
38		6	26	445	373	1420	4.735
38		7	24	519	427	1490	5.352
42		2	38	134	123	390	1.973
*42	± 0.2	3	36	301	181	580	2.885
42		4	34	269	237	850	3.749
50	± 0.2	5	40	297	-	820	5.548
50		6	38	338	-	980	6.511
60	± 0.2	3	54	268	-	390	4.216
60		5	50	108	-	616	6.781

***Std. Manufactured Sizes.**

Calculation of pressures: Calculation of pressures given are according to DIN 2413 case I for predominant static stress ——— $P = \frac{20\ K.s.c.}{S.da}$ (bar)

Material characteristic value K = 235 N/mm^2 and

DIN 2413 case III for dynamic stress ——— $P = \frac{20\ K.s.c.}{S.\ (da + s.c.)}$ (bar)

- Material characteristic value K = 226 N/mm2 (permanent fatigue strength) Safety correction value S = 1.5 for static & dynamic stress.
- Factor C for consideration of wall thickness divergence for static and dynamic stress = 0.8 for tube o.d. 4 to 5; 0.85 for Tube O.D. 6 to 8; 0.9 for larger Tube o.d.
- Additional allowances towards other factors like corrosion, thinning of tubes while bending etc. are not considered for calculation of pressure.

Specifications:

DIN 2391, DIN 2445, DIN 17175, BS 3059, EN 10305, EN 10216-2, SAE J 524, IS 3601, IS 3074, AISI 1010, A 179, A 192, A210, A334 & also other specifications & requirements.

Applications:

Hydraulic Tubing, High pressure Diesel fuel injection tubing, Tubes for heat exchanger, Tubes for General Engineering applications.

Product Highlights:

- Internally & Externally Scale free bright tubes since annealed / normalized in bright annealing furnace under controlled / reducing atmosphere.
- Tubes are manufactured out of fully aluminium killed steel only to avoid problem of ageing which can lead to embrittlement & cracks.
- Surface roughness value Ra below 4:U in tubes as per EN 10305-1.
- Uniformaly annealed soft tubes, suitable for proper ferrule biting, flaring, bending etc.
- Tubes can be supplied with even closer dimensional tolerance than allowed by various codes subject to prior agreement.
- Reliable source of raw material.
- Reliable quality assurance system.
- Tubes having internal diameter of 6mm and above can be supplied in phosphated condition subject to prior agreement.
- Product supplied with inspection under leading consultants and inspection agencies like ABS, LRIS, BV, DNV, EIL, PDIL, UHDE, Humphrys, IBR, IRS etc.

COMMON STEEL GRADES

Chemical Properties

Steel Grade	Material No	% By Mass					
		C%	Si %	Mn %	P %	S %	Al %
		max.	max.		max.	max.	min.
St30Al	1.0212	0.10	0.05	≤ 0.55	0.025	0.025	-
St35	1.0308	0.17	0.35	≥ 0.40	0.025	0.025	-
St37.4	1.0255	0.17	0.35	≥ 0.35	0.004	0.004	0.020
St45	1.0408	0.21	0.35	≥ 0.40	0.025	0.025	-
St52	1.0580	0.22	0.55	≤ 1.60	0.025	0.025	-
E215	1.0212	0.10	0.05	≤ 0.70	0.025	0.025	0.025
E235	1.0308	0.17	0.35	≤ 1.20	0.025	0.025	-
E355	1.0580	0.22	0.55	≤ 1.60	0.025	0.025	-
P235TR2	1.0255	0.16	0.35	≤ 1.20	0.025	0.020	0.002
P235GH	1.0345	0.16	0.35	≤ 1.20	0.025	0.020	0.020
P265GH	1.0425	0.20	0.40	≤ 1.40	0.025	0.020	0.020

Mechanical Properties

	As Drawn = BK(+C)		Normalized = NBK (+N)		
Steel Grade	Tensile Strength Kg./Sq. mm. (min)	Elongation at rupture (% min)	Tensile Strength Kg./Sq. mm. (min)	Upper yield point Kg./Sq. mm. (min)	Elongation at rupture (% min)
St30Al	-	-	29.60-42.80	21.90	30.00
St35	-	-	35.70-49.00	24.00	25.00
St37.4	49.00	6.00	34.70-47.90	24.00	25.00
St45	59.20	5.00	44.90-58.10	26.00	21.00
St52	65.30	4.00	50.00-64.30	36.02	22.00
E215	43.90	8.00	29.06-43.8	21.09	30.00
E235	48.90	6.00	34.07-48.9	24.00	25.00
E355	65.30	4.00	50.00-64.30	36.20	22.00
P235TR2	-	-	36.70-51.00	24.00	25.00
P235GH	-	-	36.70-51.00	24.00	25.00
P265GH	-	-	41.80-58.10	27.00	23.00

BK/+C = (As Drawn) - Cold finished as drawn - No heat treatment after last cold forming process.

NBK/+N = (Normalized) - Tubes are normalized above the upper transformation point in controlled atmosphere.

Size Range: OD: 3mm to 75mm

Wall Thickness: 0.5mm to 7.5mm Wall Thickness.

COMMON GRADES & SPECIFICATIONS FOR TUBES & PIPES

MOC	Type	Specification	Chemical Properties										Mechanical Properties			
	Seamless = S Welded = W	Grade	C %	Mn %	P %	S %	Si %	Cr %	Cu%	Mo %	Ni %	Va %	Tensil Strgth (Mpa)	Yield Stress (Mpa)	Elgatn (in 50mm min Longitudinal)	Remark
CS	S/W	ASTM A 53 Gr. A	0.25 max	0.95 max	0.050 max	0.045 max	-	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	330 min	205 min	-	-
CS	S/W	ASTM A 53 Gr. B	0.30 max	1.20 max	0.050 max	0.045 max	-	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	415 min	240 min	-	-
CS	S	ASTM A 106 Gr. A	0.25 max	0.27-0.93	0.035 max	0.035 max	0.10 min	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	330 min	205 min	-	-
CS	S	ASTM A 106 Gr. B	0.30 max	0.29-1.06	0.035 max	0.035 max	0.10 min	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	415 min	240 min	-	-
CS	S	ASTM A 106 Gr. C	0.35 max	0.29-1.06	0.035 max	0.035 max	0.10 min	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	485 min	275 min	-	-
CS	S	ASTM A 179	0.06-0.18	0.27-0.63	0.035 max	0.035 max	-	-	-	-	-	-	-	-	-	72 HRM max
CS	S	ASTM A 192	0.06-0.18	0.27-0.63	0.035 max	0.035 max	0.25 max	-	-	-	-	-	-	-	-	72 HRB max
CS	S/W	Bs3059/1 Gr. 320	0.16 max	0.30-0.70	0.050 max	0.050 max	-	-	-	-	-	-	320 - 480	195 min	25 min	-
CS	S/W	Bs3059/2 Gr. 360	0.17 max	0.40-0.70	0.050 max	0.050 max	0.10-0.35	-	-	-	-	-	360 - 500	215 min	24 min	-
CS	S/W	Bs3059/2 Gr. 440	0.12-0.18	0.90-1.20	0.040 max	0.035 max	0.10-0.35	-	-	-	-	-	440 - 580	245 min	21 min	-
AS	S/W	Bs3059/2 Gr. 620	0.10-0.15	0.40-0.70	0.040 max	0.040 max	0.10-0.35	0.70-1.10	-	0.45-0.65	-	-	460 - 610	180 min	22 min	-
CS	S/W	IS1239 Part 1	0.20 max	1.30 max	0.040 max	0.040 max	-	-	-	-	-	-	320 min	-	20 min	-
CS	S/W	IS 3589 Fe 330	0.16 max	1.20 max	0.040 max	0.040 max	-	-	-	-	-	-	330 min	195 min	20 min	-
CS	S/W	IS 3589 Fe 410	0.20 max	1.30 max	0.040 max	0.040 max	-	-	-	-	-	-	410 min	235 min	18 min	-
AS	S	ASTM A 335/P1	0.10-0.20	0.30-0.80	0.025 max	0.025 max	0.10-0.50	-	-	0.45-0.65	-	-	380 min	205 min	30 min	-
AS	S	ASTM A 335/P2	0.10-0.20	0.30-0.61	0.025 max	0.025 max	0.10-0.30	0.50-0.81	-	0.45-0.65	-	-	380 min	205 min	30 min	-
AS	S	ASTM A 335/P5	0.15 max	0.30-0.60	0.025 max	0.025 max	0.50 max	4.00-6.00	-	0.45-0.65	-	-	415 min	205 min	30 min	-
AS	S	ASTM A 335/P9	0.15 max	0.30-0.60	0.025 max	0.025 max	0.25-1.00	8.00-10.00	-	0.90-1.10	-	-	415 min	205 min	30 min	-
AS	S	ASTM A 335/P11	0.05-0.15	0.30-0.60	0.025 max	0.025 max	0.25-1.00	1.00-1.50	-	0.45-0.65	-	-	415 min	205 min	30 min	-
AS	S	ASTM A 335/P12	0.05-0.15	0.30-0.60	0.025 max	0.025 max	0.50 max	0.80-1.25	-	0.45-0.65	-	-	415 min	220 min	30 min	-
AS	S	ASTM A 335/P22	0.05-0.15	0.30-0.60	0.025 max	0.025 max	0.50 max	1.90-2.60	-	0.87-1.13	-	-	415 min	205 min	30 min	-
SS	S	ASTM A 213 TP 304	0.08 max	2.00 max	0.045 max	0.030 max	1.00 max	18-20	-	-	8-11	-	515 min	205 min	35 min	-
SS	S	ASTM A 213 TP 304 L	0.035 max	2.00 max	0.045 max	0.030 max	1.00 max	18-20	-	-	8-12	-	485 min	170 min	35 min	-
SS	S	ASTM A 213 TP 316	0.08 max	2.00 max	0.045 max	0.030 max	1.00 max	16-18	-	2.00-3.00	10-14	-	515 min	205 min	35 min	-
SS	S	ASTM A 213 TP 316 L	0.035 max	2.00 max	0.045 max	0.030 max	1.00 max	16-18	-	2.00-3.00	10-14	-	485 min	170 min	35 min	-
SS	S	ASTM A 213 TP 316 TI	0.08 max	2.00 max	0.045 max	0.030 max	0.75 max	16-18	-	2.00-3.00	10-14	-	515 min	205 min	35 min	Ti:5xC%min-0.70 max
SS	S	ASTM A 213 TP 321	0.08 max	2.00 max	0.045 max	0.030 max	1.00 max	17-19	-	-	9-12	-	415 min	205 min	35 min	Ti:5xC%min-0.70 max
SS	S	ASTM A 213 TP 321 H	0.04-0.10	2.00 max	0.045 max	0.030 max	1.00 max	17-19	-	-	9-12	-	515 min	205 min	35 min	Ti:5xC%min-0.70 max
SS	S/W	ASTM A 268 TP 410	0.15 max	1.00 max	0.040 max	0.030 max	0.75 max	11.5-13.5	-	-	0.50 max	-	415 min	205 min	20 min	-
SS	S/W	ASTM A 269 TP 304	0.08max	2.00 max	0.045 max	0.030 max	1.00 max	18-20	-	-	8-11	-	485 min	170 min	35 min	Hardness 90 HRB max
SS	S/W	ASTM A 269 TP 304 L	0.035 max	2.00 max	0.045 max	0.030 max	1.00 max	18-20	-	-	8-12	-	485 min	170 min	35 min	Hardness 90 HRB max
SS	S/W	ASTM A 269 TP 316	0.08max	2.00 max	0.045 max	0.030 max	1.00 max	16-18	-	2.00-3.00	10-14	-	515 min	205 min	35 min	Hardness 90 HRB max
SS	S/W	ASTM A 269 TP 316 L	0.035 max	2.00 max	0.045 max	0.030 max	1.00 max	16-18	-	2.00-3.00	10-15	-	485 min	170 min	35 min	Hardness 90 HRB max
SS	S/W	ASTM A 312 TP 304	0.08max	2.00 max	0.045 max	0.030 max	1.00 max	18-20	-	-	8-11	-	515 min	205 min	35 min	-
SS	S/W	ASTM A 312 TP 304 L	0.035 max	2.00 max	0.045 max	0.030 max	1.00 max	18-20	-	-	8-13	-	485 min	170 min	35 min	-
SS	S/W	ASTM A 312 TP 316 L	0.08max	2.00 max	0.045 max	0.030 max	1.00 max	16-18	-	2.00-3.00	11-14	-	515 min	205 min	35 min	Welded pipe Ni = 10-14
-	S/W	ASTM A 312 TP 316 L	0.035 max	2.00 max	0.045 max	0.030 max	1.00 max	16-18	-	2.00-3.00	10-14	-	485 min	170 min	35 min	-

APPLICATIONS IN DIFFERENT SECTORS

Steel Plants & Turnkey Projects

Hydraulic Systems & Equipments

Earth Moving Equipments

Injection Moulding Machines

Oil & Gas Energy

Shipping & Ship Building

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"MHPL Striving To Build Stronger Relations Globally"

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