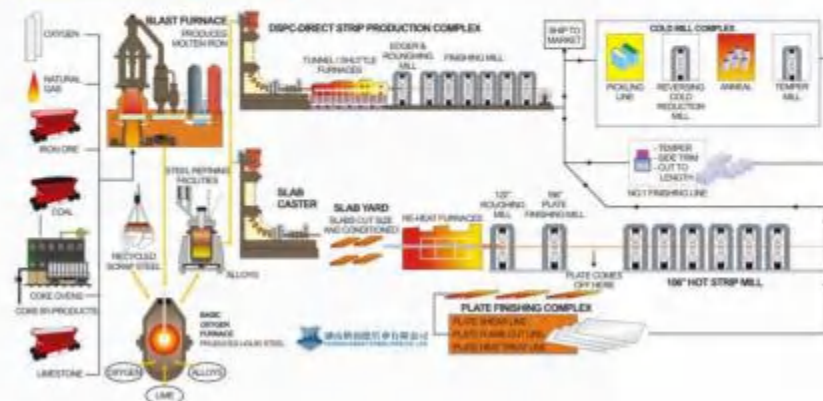




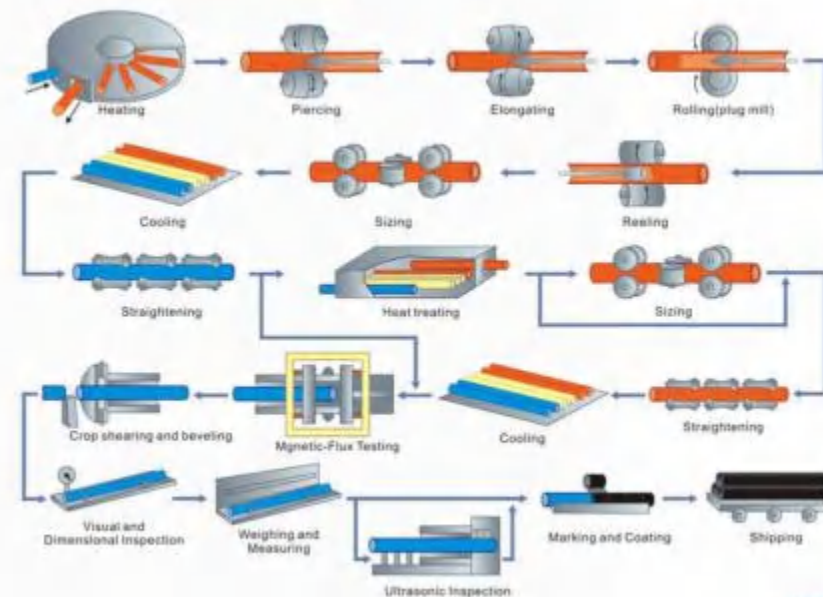
B Production

Production Process Flow Chart

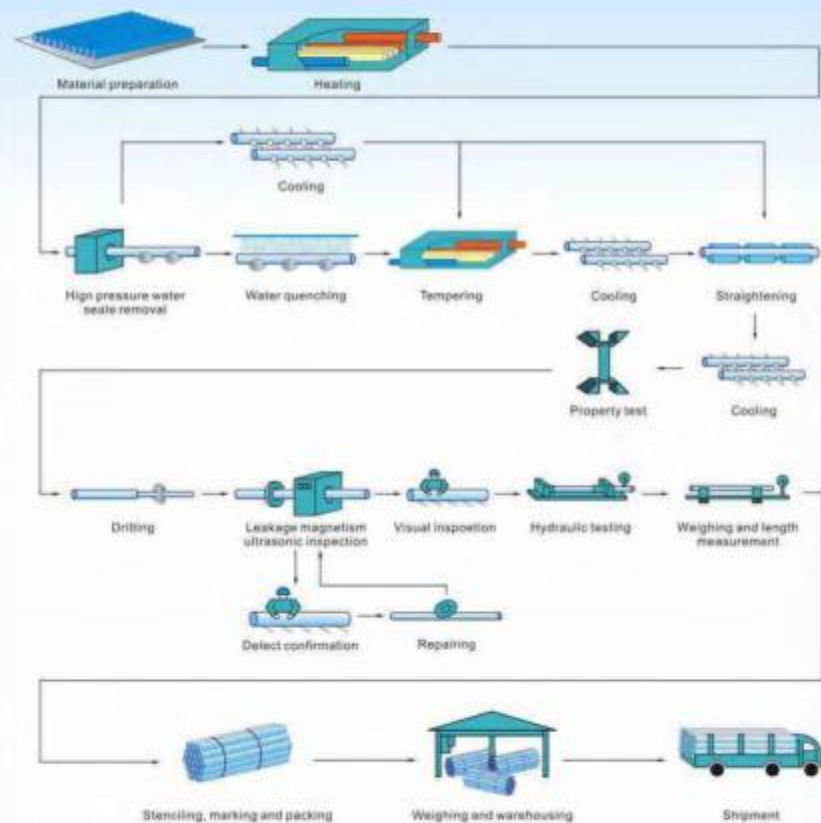
Steel Making Process



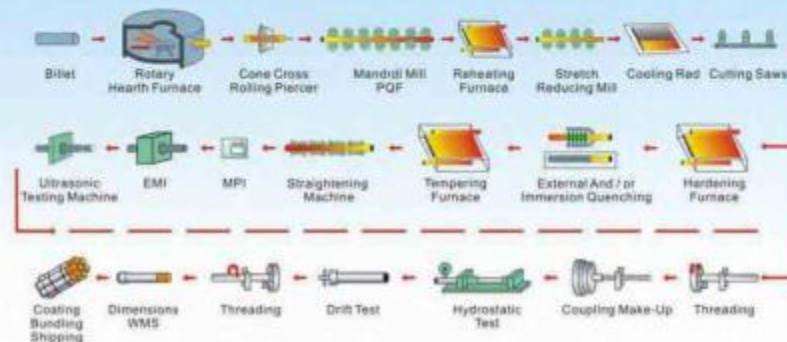
Tube Manufacturing Process



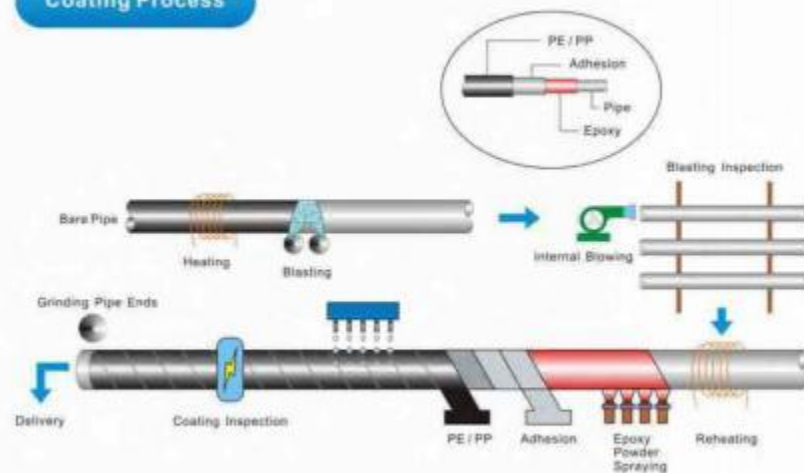
Heat Treatment Process



Tube Finishing Process



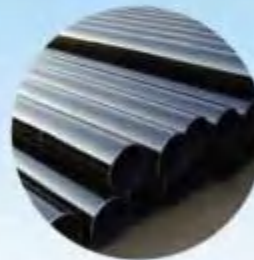
Coating Process



SEAMLESS STEEL PIPE

Types of Seamless Steel Pipe

Types	Uses
Structure Purposes	General structure and mechanical
Liquid Services	Petroleum, gas and other fluids conveying
Low and Medium Pressure	Steam and boiler manufacturing
Hydraulic Pillar Service	Hydraulic support
Auto Semi-shaft Casing	Auto semi-shaft casing
Line Pipe	Oil and gas conveying
Tubing and Casing	Oil and gas conveying
Drill Pipes	Well drilling
Geological Drilling Pipes	Geological drilling
Petroleum Cracking Tubes	Furnace tubes, heat exchangers



Standard of Seamless Steel Pipe

Standard	Grade		Chemical Composition(%)													Cr+Cu+Mo+Ni
	Steel Name	Steel Number	c	Si	Mn	P	S	Cr	Mo	Ni	Al	Cu	Nb	Ti	V	
EN 10216-1	P195TR1	1.0107	≤0.13	≤0.35	≤0.70	≤0.025	≤0.020	≤0.30	≤0.08	≤0.30	-	≤0.30	≤0.010	≤0.04	≤0.02	≤0.70
	P195TR2	1.0108	≤0.13	≤0.35	≤0.70	≤0.025	≤0.020	≤0.30	≤0.08	≤0.30	0.02	≤0.30	≤0.010	≤0.04	≤0.02	≤0.70
	P235TR1	1.0254	≤0.16	≤0.35	≤1.20	≤0.025	≤0.020	≤0.30	≤0.08	≤0.30	-	≤0.30	≤0.010	≤0.04	≤0.02	≤0.70
	P235TR2	1.0255	≤0.16	≤0.35	≤1.20	≤0.025	≤0.020	≤0.30	≤0.08	≤0.30	≥0.02	≤0.30	≤0.010	≤0.04	≤0.02	≤0.70
	P265TR1	1.0256	≤0.20	≤0.40	≤1.40	≤0.025	≤0.020	≤0.30	≤0.08	≤0.30	-	≤0.30	≤0.010	≤0.04	≤0.02	≤0.70

Standard	Grade		Yield Strength(Mpa)		Tensile Strength(Mpa)	Elongation(%)		Impact Properties(KV J)		
	Steel Name	Steel Number	Wt ≤ 16	16-Wt ≤ 40	40-Wt ≤ 50	Longitudinal	transverse	Longitudinal	transverse	
EN 10216-1								0°C	-10°C	0°C
	P195TR1	1.0107	≥ 195	≥ 185	≥ 175	≥ 27	≥ 25	-	-	-
	P195TR2	1.0108	≥ 195	≥ 185	≥ 175	≥ 27	≥ 25	≥ 40	≥ 28	≥ 27
	P235TR1	1.0254	≥ 235	≥ 225	≥ 215	≥ 25	≥ 23	-	-	-
	P235TR2	1.0255	≥ 235	≥ 225	≥ 215	≥ 25	≥ 23	≥ 40	≥ 28	≥ 27
	P265TR1	1.0256	≥ 265	≥ 255	≥ 245	≥ 21	≥ 19	-	-	-

Standard	Grade	Chemical Components (%)								Mechanical Properties		
		c	Si	Mn	P	S	Mo	Cr	V	Tensile Strength(Mpa)	Yield Strength(Mpa)	Elongation(%)
ASTM A53	A	≤0.25	/	≤0.95	≤0.05	≤0.06	≤0.15	≤0.40	≤0.08	≥330	≥205	≥28.5
	B	≤0.30	/	≤1.2	≤0.05	≤0.06	≤0.15	≤0.40	≤0.08	≥415	≥240	≥29.5

Standard	Grade	Chemical Components (%)								Mechanical Properties		
		c	Si	Mn	P	S	Mo	Cr	V	Tensile Strength(Mpa)	Yield Strength(Mpa)	Elongation(%)
ASTM A106	A	≤0.30	≤0.10	0.29-1.06	≤0.035	≤0.035	≤0.15	≤0.40	≤0.08	≥415	≥240	≥30
	B	≤0.35	≤0.10	0.29-1.06	≤0.035	≤0.035	≤0.15	≤0.40	≤0.08	≥485	≥275	≥30

Standard	Grade	Chemical Components (%)								Mechanical Properties		
		c	Si	Mn	P	S	Mo	Cr	V	Tensile Strength(Mpa)	Yield Strength(Mpa)	Elongation(%)
ASTM A179	A179	0.06-0.18	/	0.27-0.63	≤0.035	≤0.035	/	/	/	≥325	≥180	≥35

Standard	Grade	Chemical Components (%)								Mechanical Properties		
		c	Si	Mn	P	S	Mo	Cr	V	Tensile Strength(Mpa)	Yield Strength(Mpa)	Elongation(%)
ASTM A192	A192	0.06-0.18	≤0.25	0.27-0.63	≤0.035	≤0.035	/	/	/	≥325	≥180	≥35



Dimension Tolerances of Seamless Steel Pipe

Pipe types	Pipe Size (mm)		Tolerances
Hot rolled	OD	<50	±0.50mm
		≥50	±1%
	WT	<4	±12.5%
		≥4~20	+15% -12.5%
		>20	±12.5%
Cold drawn	OD	6~10	±0.20mm
		10~30	±0.40mm
		30~50	±0.45
	WT	≥50	±1%
		≤1	±0.15mm
		>1~3	+15% -10%
		>3	+12.5% -10%

Specifications of Seamless Steel Pipe

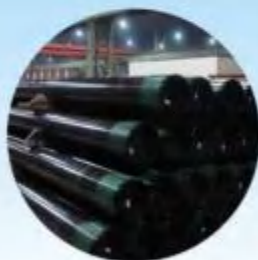
Out Diameter	Wall Thickness (mm)																																				
mm	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
73																																					
76.1																																					
82.5																																					
88.9																																					
101.6																																					
114.3																																					
127																																					
139.7																																					
152.4																																					
159																																					
168.3																																					
177.8																																					
193.7																																					
203																																					
219.1																																					
244.5																																					
273																																					
298.5																																					
323.8																																					
339.7																																					
355.6																																					
406.4																																					
457.2																																					
473.1																																					
508																																					
530																																					
558.8																																					
609.6																																					
630																																					

Standard	Grade	Chemical Components				Tensile Strength(min)		Yield Strength(min)	
		C	Mn	P	S	Mpa		Mpa	
API 5L PSL2	B	0.24	1.20	0.025	0.015	414		241	
	X42	0.24	1.30	0.025	0.015	414		290	
	X46	0.24	1.40	0.025	0.015	434		317	
	X52	0.24	1.40	0.025	0.015	455		359	
	X56	0.24	1.40	0.025	0.015	490		386	
	X60	0.24	1.40	0.025	0.015	517		414	
	X65	0.24	1.40	0.025	0.015	531		448	
	X70	0.24	1.40	0.025	0.015	565		483	
	X80	0.24	1.40	0.025	0.015	621		552	

Standard	Grade	Chemical Components				Tensile Strength(min)		Yield Strength(min)	
		C	Mn	P	S	Mpa		Mpa	
API 5L PSL1	A	0.22	0.90	0.030	0.030	331		207	
	B	0.28	1.20	0.030	0.030	414		241	
	X42	0.28	1.30	0.030	0.030	414		290	
	X46	0.28	1.40	0.030	0.030	434		317	
	X52	0.28	1.40	0.030	0.030	455		359	
	X56	0.28	1.40	0.030	0.030	490		386	
	X60	0.28	1.40	0.030	0.030	517		414	
	X65	0.28	1.40	0.030	0.030	531		448	
	X70	0.28	1.40	0.030	0.030	565		483	

CASING & TUBING

API 5CT TUBING



Dimension

Label				D Outside diameter mm	Wall thickness t mm	C Type of end-finish							
1	2	3	4			H40	J55	L80	N80 17 Q2	C90	T95	P110	
1	2	3	4	5	9	10	11	12	13	14	15	16	
1.9	2.75	2.8	2.76	48.26	3.68	PNUI	PNUI	PNUI	PNUI	PNUI	PNUI	-	
1.9	3.65	3.73	-	48.26	5.08	PU	PU	PU	PU	PU	PU	PU	
1.9	4.42	-	-	48.26	6.35	-	-	P	-	P	P	-	
2 3/8	4	-	-	60.32	4.24	PU	PN	PN	PN	PN	PN	-	
2 3/8	4.6	4.7	-	60.32	4.83	PNUI	PNUI	PNUI	PNUI	PNUI	PNUI	PNUI	
2 3/8	5.8	5.95	-	60.32	6.45	-	-	PNUI	PNUI	PNUI	PNUI	PNUI	
2 3/8	6.6	-	-	60.32	7.49	-	-	P	-	P	P	-	
2 3/8	7.35	7.45	-	60.32	8.53	-	-	PU	-	PU	PU	-	
2 7/8	6.4	6.5	-	73.02	5.51	PNUI	PNUI	PNUI	PNUI	PNUI	PNUI	PNUI	
2 7/8	7.8	7.9	-	73.02	7.01	-	-	PNUI	PNUI	PNUI	PNUI	PNUI	
2 7/8	8.6	8.7	-	73.02	7.82	-	-	PNUI	PNUI	PNUI	PNUI	PNUI	
2 7/8	9.35	9.45	-	73.02	8.64	-	-	PU	-	PU	PU	-	
2 7/8	10.5	-	-	73.02	9.96	-	-	P	-	P	P	-	
3 1/2	7.7	-	-	88.9	5.49	PN	PN	PN	PN	PN	PN	-	
3 1/2	9.2	9.3	-	88.9	6.45	PNUI	PNUI	PNUI	PNUI	PNUI	PNUI	PNUI	
3 1/2	10.2	-	-	88.9	7.34	PN	PN	PN	PN	PN	PN	-	
3 1/2	12.7	12.95	-	88.9	9.52	-	-	PNUI	PNUI	PNUI	PNUI	PNUI	
3 1/2	14.3	-	-	88.9	10.92	-	-	P	-	P	P	-	
3 1/2	15.5	-	-	88.9	12.09	-	-	P	-	P	P	-	
4	9.5	-	-	101.6	5.74	PN	PN	PN	PN	PN	PN	-	
4	10.7	11	-	101.6	6.65	PU	PU	PU	PU	PU	PU	-	
4	13.2	-	-	101.6	8.38	-	-	P	-	P	P	-	
4	16.1	-	-	101.6	10.54	-	-	P	-	P	P	-	
4 1/2	2.6	12.75	-	114.3	6.88	PNUI	PNUI	PNUI	PNUI	PNUI	PNUI	-	
4 1/2	15.2	-	-	114.3	8.56	-	-	P	-	P	P	-	

Mechanical Properties

Group	Grade	Type	Total elongation under load %	Yield strength Mpa		Tensile strength min Mpa	Hardness max	
				min	max		HRC	HBW
1	2	3	4	5	6	7	8	9
1	J55	-	0.5	379	552	517	-	-
	K55	-	0.5	379	552	655	-	-
	N80	1	0.5	552	758	689	-	-
	N80	Q	0.5	552	758	689	-	-
2	L80	1	0.5	552	655	655	23	241
	L80	9Cr	0.5	552	655	655	23	241
	L80	13Cr	0.5	552	655	655	23	241
	C90	172	0.5	621	724	689	25.4	255
	C95	-	0.5	655	758	724	-	-
3	T95	172	0.5	655	758	724	25.4	255
	P110	-	0.6	758	965	862	-	-
4	Q125	All	0.65	862	1034	931	-	-



API 5CT CASING

Dimension

Labels		Outside diameter D	Nominal linear mass T&C	Wall thickness t	J55	N80	L80	C90	P110	Q125
		mm	kg/m	mm	K55	17Q?		T95		
1	2	3	4	5	6	7	8	9	10	11
4 1/2	9.5	114.3	14.14	5.21	PS	-	-	-	-	-
4 1/2	10.5	114.3	15.63	5.69	PSB	-	-	-	-	-
4 1/2	11.6	114.3	17.26	6.35	PSLB	PLB	PLB	PLB	PLB	-
4 1/2	13.5	114.3	20.09	7.37	-	PLB	PLB	PLB	PLB	-
4 1/2	15.1	114.3	22.47	8.56	-	-	-	-	PLB	PLB
5	11.5	127	17.11	5.59	PS	-	-	-	-	-
5	13	127	19.35	6.43	PSLB	-	-	-	-	-
5	15	127	22.32	7.52	PSLBE	PLBE	PLBE	PLBE	PLBE	-
5	16	127	26.79	9.19	-	PLBE	PLBE	PLBE	PLBE	PLBE
5	21.4	127	31.85	11.1	-	PLB	PLB	PLB	PLB	PLB
5	23.2	127	34.53	12.14	-	PLB	PLB	PLB	PLB	PLB
5	24.1	127	35.86	12.7	-	PLB	PLB	PLB	PLB	PLB
5 1/2	14	139.7	20.83	6.2	PS	-	-	-	-	-
5 1/2	15.5	139.7	23.07	6.98	PSLB	-	-	-	-	-
5 1/2	17	139.7	25.3	7.72	PSLBE	PLBE	PLBE	PLBE	PLBE	-
5 1/2	20	139.7	29.76	9.17	-	PLBE	PLBE	PLBE	PLBE	-
5 1/2	23	139.7	34.23	10.54	-	PLBE	PLBE	PLBE	PLBE	PLBE
5 1/2	26.6	139.7	39.88	12.7	-	-	P	-	-	-
5 1/2	29.7	139.7	44.2	14.27	-	-	P	-	-	-
5 1/2	32.6	139.7	48.51	15.88	-	-	P	-	-	-
5 1/2	35.3	139.7	52.53	17.45	-	-	P	-	-	-
5 1/2	38	139.7	56.55	19.05	-	-	P	-	-	-
5 1/2	40.5	139.7	60.27	20.62	-	-	P	-	-	-
5 1/2	43.1	139.7	64.14	22.22	-	-	P	-	-	-
6 5/8	20	168.28	29.76	7.32	PSLB	-	-	-	-	-
6 5/8	24	168.28	35.72	8.94	PSLBE	PLBE	PLBE	PLBE	PLBE	-
6 5/8	26	168.28	41.67	10.59	-	PLBE	PLBE	PLBE	PLBE	-
6 5/8	32	168.28	47.62	12.06	-	PLBE	PLBE	PLBE	PLBE	PLBE
7	17	177.8	25.3	5.87	-	-	-	-	-	-
7	20	177.8	29.76	6.91	PS	-	-	-	-	-
7	23	177.8	34.23	8.05	PSLBE	PLBE	PLBE	PLBE	PLBE	-
7	26	177.8	38.69	9.19	PSLBE	PLBE	PLBE	PLBE	PLBE	-
7	29	177.8	43.16	10.36	-	PLBE	PLBE	PLBE	PLBE	-
7	32	177.8	47.62	11.51	-	PLBE	PLBE	PLBE	PLBE	-
7	35	177.8	52.09	12.65	-	PLBE	PLBE	PLBE	PLBE	PLBE
7	38	177.8	56.55	13.72	-	PLBE	PLBE	PLBE	PLBE	PLBE
7	42.7	177.8	63.54	15.86	-	-	P	-	-	-
7	46.4	177.8	69.05	17.45	-	-	P	-	-	-
7	50	177.8	74.56	19.05	-	-	P	-	-	-
7	53.6	177.8	79.77	20.62	-	-	P	-	-	-
7	57.1	177.8	84.97	22.22	-	-	P	-	-	-
7 5/8	24	193.68	35.72	7.62	-	-	-	-	-	-
7 5/8	26.4	193.68	39.29	8.33	PSLBE	PLBE	PLBE	PLBE	PLBE	-
7 5/8	29.7	193.68	44.2	9.52	-	PLBE	PLBE	PLBE	PLBE	-
7 5/8	33.7	193.68	50.15	10.92	-	PLBE	PLBE	PLBE	PLBE	-
7 5/8	39	193.68	58.04	12.7	-	PLBE	PLBE	PLBE	PLBE	PLBE
7 5/8	42.8	193.68	63.69	14.27	-	PLB	PLB	PLB	PLB	PLB
7 5/8	45.3	193.68	67.41	15.11	-	PLB	PLB	PLB	PLB	PLB
7 5/8	47.1	193.68	70.09	15.88	-	PLB	PLB	PLB	PLB	PLB
7 5/8	51	193.68	76.19	17.45	-	-	P	-	-	-
7 5/8	55.3	193.68	82.3	19.05	-	-	P	-	-	-

Labels		Outside diameter D	Nominal linear mass T&C	Wall thickness t	J55	N80	L80	C90	P110	Q125
		mm	kg/m	mm	K55	17Q?		T95		
1	2	3	4	5	6	7	8	9	10	11
8 5/8	24	219.08	35.72	6.71	PS	-	-	-	-	-
8 5/8	26	219.08	41.67	7.72	-	-	-	-	-	-
8 5/8	32	219.08	47.62	8.94	PSLBE	-	-	-	-	-
8 5/8	36	219.08	53.57	10.16	-	PLBE	PLBE	PLBE	PLBE	-
8 5/8	40	219.08	59.53	11.43	-	PLBE	PLBE	PLBE	PLBE	-
8 5/8	44	219.08	65.48	12.7	-	PLBE	PLBE	PLBE	PLBE	-
8 5/8	49	219.08	72.92	14.15	-	PLBE	PLBE	PLBE	PLBE	PLBE
9 5/8	32	244.48	48.07	7.92	-	-	-	-	-	-
9 5/8	36	244.48	53.57	8.94	PSLB	-	-	-	-	-
9 5/8	40	244.48	59.53	10.03	PSLBE	-	-	-	-	-
9 5/8	43.5	244.48	64.73	11.05	-	PLBE	PLBE	PLBE	PLBE	-
9 5/8	47	244.48	69.94	11.99	-	PLBE	PLBE	PLBE	PLBE	PLBE
9 5/8	53.5	244.48	79.62	13.84	-	PLBE	PLBE	PLBE	PLBE	PLBE
9 5/8	58.4	244.48	86.91	15.11	-	PLB	PLB	PLB	PLB	PLB
9 5/8	59	244.48	88.4	15.47	-	-	P	-	-	-
9 5/8	64.9	244.48	96.58	17.07	-	-	P	-	-	-
9 5/8	70.3	244.48	104.62	18.64	-	-	P	-	-	-
9 5/8	75.6	244.48	112.5	20.24	-	-	P	-	-	-
10 3/4	32.75	273.05	48.74	7.09	-	-	-	-	-	-
10 3/4	40.5	273.05	60.27	8.89	PSB	-	-	-	-	-
10 3/4	45.5	273.05	67.71	10.16	PSBE	-	-	-	-	-
10 3/4	51	273.05	75.9	11.43	PSBE	PSBE	PSBE	PSBE	PSBE	-
10 3/4	55	273.05	82.59	12.57	-	PSBE	PSBE	PSBE	PSBE	-
10 3/4	60.7	273.05	90.33	13.84	-	-	PSBE	PSBE	PSBE	PSBE
10 3/4	65.7	273.05	97.77	15.11	-	-	PSB	PSB	PSB	-
10 3/4	73.2	273.05	108.93	17.07	-	-	P	-	-	-
10 3/4	79.2	273.05	117.86	18.64	-	-	P	-	-	-
10 3/4	85.3	273.05	126.94	20.24	-	-	P	-	-	-
11 3/4	42	298.45	62.5	8.46	-	-	-	-	-	-
11 3/4	47	298.45	69.94	9.53	PSB	-	-	-	-	-
11 3/4	54	298.45	80.36	11.05	PSB	-	-	-	-	-
11 3/4	60	298.45	89.29	12.42	PSB	PSB	PSB	PSB	PSB	PSB
11 3/4	65	298.45	96.73	13.56	-	P	P	P	P	P
11 3/4	71	298.45	105.66	14.76	-	P	P	P	P	P
13 3/8	48	339.72	71.43	8.38	-	-	-	-	-	-
13 3/8	54.5	339.72	81.1	9.65	PSB	-	-	-	-	-
13 3/8	61	339.72	90.78	10.92	PSB	-	-	-	-	-
13 3/8	68	339.72	101.19	12.19	PSB	PSB	PSB	PSB	PSB	-
13 3/8	72	339.72	107.15	13.06	-	PSB	PSB	PSB	PSB	PSB
16	65	406.4	96.73	9.53	-	-	-	-	-	-
16	75	406.4	111.61	11.13	PSB	-	-	-	-	-
16	84	406.4	125.01	12.57	PSB	-	-	-	-	-
16	109	406.4	162.21	16.56	P	P	P	P	P	P
18 5/8	87.5	473.08	130.21	11.05	PSB	-	-	-	-	-
20	94	508	139.89	11.13	PSLB	-	-	-	-	-
20	106.5	508	156.49	12.7	PSLB	-	-	-	-	-
20	133	508	197.93	16.13	PSLB	-	-	-	-	-

P—Plain end; S—Short round thread; L—Long round thread; B—Buttress thread; E—Extreme line.



Mechanical Properties

Group	Grade	Type	Total elongation under load - %	Yield strength Mpa		Tensile strength min Mpa	Hardness max	
				min	max		HRC	HBW
1	2	3	4	5	6	7	8	9
1	J55	-	0.5	379	552	517	-	-
	K55	-	0.5	379	552	655	-	-
	N80	1	0.5	552	758	689	-	-
2	N80	Q	0.5	552	758	689	-	-
	L80	1	0.5	552	655	655	23	241
	L80	9Cr	0.5	552	655	655	23	241
	L80	13Cr	0.5	552	655	655	23	241
	C90	172	0.5	621	724	689	25.4	255
	C95	-	0.5	655	758	724	-	-
3	T95	172	0.5	655	758	724	25.4	255
	P110	-	0.6	758	965	862	-	-
4	Q125	All	0.65	862	1034	931	-	-



Dimension and Tolerances

Item		Tolerance	
Out Diameter	Pipe Body	OD ≤ 101.60mm ± 0.79mm	
		OD ≥ 114.30mm	1.0% OD
			-0.5% OD
	Coupling	± 1% OD	
Wall Thickness		-12.5%	
Weight	Single Lengths	+6.5%	
	Carload Lots	-3.5%	
		-1.75%	

Lengths

Item	R1 (Range)	R2 (Range)	R3 (Range)
Tubing	6.10-7.32m	8.53-9.75m	11.58-12.80m

Chemical Composition

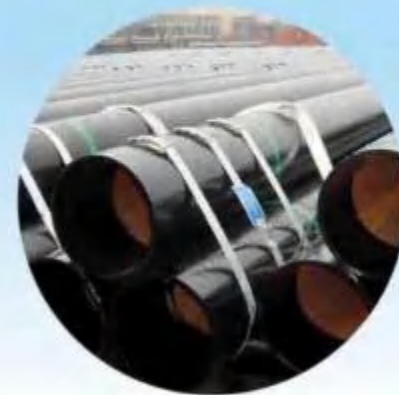
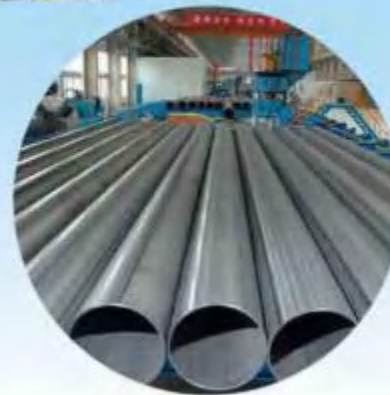
Grade	Chemical Composition(%)								
	C(max)	Mn(max)	Mo(max)	Cr(max)	Ni(max)	Cu(max)	P(max)	S(max)	Si(max)
J55	-	-	-	-	-	-	0.030	0.030	-
K55	-	-	-	-	-	-	0.030	0.030	-
N80	-	-	-	-	-	-	0.030	0.030	-
L80-1	0.43	1.90	-	-	0.25	0.35	0.030	0.030	0.45
C90-1	0.35	1.00	0.75	1.20	0.99	-	0.020	0.010	-
C90-2	0.50	1.90	N.L.	N.L.	0.99	-	0.030	0.010	-
C95	0.45	1.90	-	-	-	-	0.030	0.030	0.045
T95-1	0.35	1.20	0.85	1.50	0.99	-	0.020	0.010	-
T95-2	0.50	1.90	-	-	-	-	0.030	0.010	-
P110	-	-	-	-	-	-	0.030	0.030	-
M85	-	-	-	-	-	-	0.020	0.010	-
BG80S	-	-	-	-	-	-	0.020	0.010	-
BG80T	-	-	-	-	-	-	0.030	0.030	-
BG110T	-	-	-	-	-	-	0.030	0.030	-

Mechanical Properties

Grade	Yield Strength				Tensile Strength		Hardness		Allowable Hardness
	Min		Max		Min		Max		
	Psi	Mpa	Psi	Mpa	Psi	Mpa	HRC	HBW	
J55	55,000	379	80,000	552	75,000	517	-	-	-
K55	55,000	379	80,000	552	95,000	655	-	-	-
N80	80,000	552	110,000	758	100,000	689	-	-	-
L80-1	80,000	552	95,000	655	95,000	655	23	241	-
C90	90,000	621	105,000	724	100,000	689	25.4	255	3.0
C95	95,000	655	110,000	758	105,000	724	-	-	-
T95	95,000	655	110,000	758	125,000	724	25.4	255	3.0
P110	110,000	758	140,000	985	100,000	862	-	-	-
M85	85,000	448	85,000	586	85,000	586	22	235	-
BG80S	83,000	570	99,000	680	100,000	689	23	241	-
BG80T	80,000	552	110,000	758	100,000	689	-	-	-
BG110T	110,000	758	140,000	965	125,000	862	-	-	-



ERW STEEL PIPE



Specifications of ERW Steel Pipe

Wall Thickness Out Diameter	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	
Inch	mm	8 5/8	219.1	10 3/4	273.1	12 3/4	323.9	14	355.6	16	406	18	457	20	508	22	559	24	610
0.157	4																		
0.173	4.4																		
0.205	5.2																		
0.22	5.6																		
0.25	6.4																		
0.28	7.1																		
0.312	7.9																		
0.344	8.7																		
0.375	9.5																		
0.406	10.3																		
0.5	12.7																		
0.562	14.3																		
0.625	15.9																		
0.688	17.5																		
0.75	19.1																		

Tolerance of Outside Diameter

Standard	Out Diameter	Tolerance of Pipe End	Tolerance of Pipe Body
API 5L	219.1~273.1	+1.6mm, -0.4mm	±0.75%
	274.0~320	+2.4mm, -0.8mm	±0.75%
	323.9~457	+2.4mm, -0.8mm	±0.75%
	508	+2.4mm, -0.8mm	±0.75%
	559~610	+2.4mm, -0.8mm	±0.75%

Tolerance of Wall Thickness

Standard	Grade	Out Diameter	Wall Thickness
API 5L	B	219.1~457	+15%, -12.5%
	B	508~610	+17.5%, -12.5%
	X42~X80	508~610	+19.5%, -8%

Chemical Analysis and Mechanical Properties

Standard	Class	Grade	Chemical Analysis(%)				Mechanical Properties	
			C	Mn	P	S	Tensile Strength (min)(Mpa)	Yield Strength (min)(Mpa)
API 5L	PSL1	B	0.26	1.20	0.030	0.030	414	241
		X42	0.26	1.30	0.030	0.030	414	290
		X46	0.26	1.40	0.030	0.030	434	317
		X52	0.26	1.40	0.030	0.030	455	359
		X56	0.26	1.40	0.030	0.030	490	386
		X60	0.26	1.40	0.030	0.030	517	414
		X65	0.26	1.45	0.030	0.030	531	448
		X70	0.26	1.65	0.030	0.030	565	483
	PSL2	B	0.22	1.20	0.025	0.015	414	241
		X42	0.22	1.30	0.025	0.015	414	290
		X46	0.22	1.40	0.025	0.015	434	317
		X52	0.22	1.40	0.025	0.015	455	359
		X56	0.22	1.40	0.025	0.015	490	386
		X60	0.22	1.40	0.025	0.015	517	414
		X65	0.22	1.45	0.025	0.015	531	448
		X70	0.22	1.65	0.025	0.015	565	483
		X80	0.22	1.85	0.025	0.015	621	552



LSAW STEEL PIPE



Specifications of LSAW Steel Pipe

Out Diameter		Wall Thickness(mm)															
Inch	mm	6.4	7.1	7.9	9.53	12.7	14.3	15.9	19.1	22.2	25.4	28.6	31.8	34.9	38.1	41.3	44.5
16	406.4																
18	457																
20	508																
22	559																
24	610																
26	660																
28	711																
30	762																
32	813																
34	864																
36	914																
38	965																
40	1016																
42	1067																
44	1118																
46	1168																
48	1219																
52	1321																
56	1422																

Tolerance of Outside Diameter and Wall Thickness

Types	Standard					
	SY/T5040-2000	SY/T5037-2000	SY/T9711.1-1977	ASTMA252	AWWA C200-97	API 5L PSL1
Tube end OD deviation	± 0.5%D	± 0.5%D	+0.78mm ~ +2.30mm	< ± 0.1%T	< ± 0.1%T	± 1.6mm
Wall thickness	± 10.0%T	D<308mm, ±12.5%T D>308mm, ±10.0%T	-8%T ~ +19.5%T	<-12.5%T -8%T ~ +19.5%T		5.0mm<T<15.0mm, ±0.11 T ≥ 15.0mm, ±1.5mm

Chemical Composition and Mechanical Properties

Standard	Grade	Chemical Composition(max)%					Mechanical Properties(min)	
		C	Mn	Si	S	P	Yield Strength(Mpa)	Tensile Strength(Mpa)
GB/T 700-2006	A	0.22	1.4	0.35	0.050	0.045	235	370
	B	0.2	1.4	0.35	0.045	0.045	235	370
	C	0.17	1.4	0.35	0.040	0.040	235	370
	D	0.17	1.4	0.35	0.035	0.035	235	370
GB/T 1591-2009	A	0.2	1.7	0.5	0.035	0.035	345	470
	B	0.2	1.7	0.5	0.030	0.030	345	470
	C	0.2	1.7	0.5	0.030	0.030	345	470
BS EN10025	S235JR	0.17	1.4	-	0.035	0.035	235	360
	S275JR	0.21	1.5	-	0.035	0.035	275	410
	S355JR	0.24	1.6	-	0.035	0.035	355	470
DIN 17100	St37-2	0.2	-	-	0.050	0.050	225	340
	St44-2	0.21	-	-	0.050	0.050	265	410
	St52-3	0.2	1.6	0.55	0.040	0.040	345	490
	SS400	-	-	-	0.050	0.050	235	400
JIS G3101	SS490	-	-	-	0.050	0.050	275	490
	A	0.22	0.9	-	0.03	0.03	210	335
API 5L PSL1	B	0.26	1.2	-	0.03	0.03	245	415
	X42	0.26	1.3	-	0.03	0.03	290	415
	X46	0.26	1.4	-	0.03	0.03	320	435
	X52	0.26	1.4	-	0.03	0.03	360	460
	X56	0.26	1.1	-	0.03	0.03	390	490
	X60	0.26	1.4	-	0.03	0.03	415	520
	X65	0.26	1.45	-	0.03	0.03	450	535
	X70	0.26	1.65	-	0.03	0.03	565	570



SSAW STEEL PIPE



Specifications of SSAW Steel Pipe

Out Diameter	Wall Thickness (mm)																								
mm	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25					
219.1																									
273																									
323.9																									
325																									
355.6																									
377																									
406.4																									
426																									
457																									
478																									
508																									
529																									
630																									
711																									
720																									
813																									
820																									
920																									
1020																									
1220																									
1420																									
1620																									
1820																									
2020																									
2220																									
2500																									
2540																									
3500																									

Standard and Classification

Classification	Standard	Main Products
Steel Pipe for Fluid Service	GB/T 14291	Welded pipe for mine fluid service
	GB/T 3091	Welded pipe for low pressure fluid service
	SY/T 5037	Spirally submerged arc welded steel pipe for pipelines for low pressure fluid service
	ASTM A53	Black and hot-hipped galvanized welded and seamless steel pipe
	BS EN10217-2	Welded steel tubes for pressure purposes - delivery technical conditions - part2: Electric welded non-alloy and alloy steel tubes with specified elevated temperature properties
	BS EN10217-5	Welded steel tubes for pressure purposes - delivery technical conditions - part5: submerged arc welded non-alloy and alloy steel tubes with specified elevated temperature properties
Steel Pipe for Ordinary Structure	GB/T 13793	Longitudinally electric resistance welded steel pipe
	SY/T 5040	Spirally submerged arc welded steel pipe piles
	ASTM A252	Welded and seamless steel pipe piles
	BS EN10219-1	Cold formed welded structural hollow sections of non-alloy and fine grain steels - part1: Technical deliver conditions
Line Pipe	BS EN10219-2	Cold formed welded structural hollow sections of non-alloy and fine grain steels - part2: tolerances dimensions and sectional properties
	GB/T 9711.1	Steel pipe for pipeline transportation system of petroleum and natural gas industries(Class A steel pipe)
	GB/T 9711.2	Steel pipe for pipeline transportation system of petroleum and natural gas industries(Class B steel pipe)
Casing	API 5L PSL1/2	Line pipe
	API 5CT/ ISO 11960 PSL1	Steel pipe for use as casing or tubing for wells of petroleum and natural gas industries



Chemical Analysis and Mechanical Properties

Standard	Grade	Chemical Composition(max)%					Mechanical Properties(min)	
		C	Si	Mn	P	S	Yield Strength(Mpa)	Tensile Strength(Mpa)
API 5CT	H40	-	-	-	-	0.030	417	417
	J55	-	-	-	-	0.030	517	517
	K55	-	-	-	-	0.300	655	655
	A	0.22	-	0.90	0.030	0.030	335	335
	B	0.26	-	1.20	0.030	0.030	415	415
API 5L PSL1	X42	0.26	-	1.30	0.030	0.030	415	415
	X46	0.26	-	1.40	0.030	0.030	435	435
	X52	0.26	-	1.40	0.030	0.030	460	460
	X56	0.26	-	1.40	0.030	0.030	490	490
	X60	0.26	-	1.40	0.030	0.030	520	520
	X65	0.26	-	1.45	0.030	0.030	535	535
	X70	0.26	-	1.65	0.030	0.030	570	570
	B	0.22	0.45	1.20	0.025	0.015	415	415
	X42	0.22	0.45	1.30	0.025	0.015	415	415
	X46	0.22	0.45	1.40	0.025	0.015	435	435
API 5L PSL2	X52	0.22	0.45	1.40	0.025	0.015	460	460
	X56	0.22	0.45	1.40	0.025	0.015	490	490
	X60	0.12	0.45	1.60	0.025	0.015	520	520
	X65	0.12	0.45	1.60	0.025	0.015	535	535
	X70	0.12	0.45	1.70	0.025	0.015	570	570
	X80	0.12	0.45	1.85	0.025	0.015	625	625
	L210	-	-	0.90	0.030	0.030	335	335
	L245	-	-	1.15	0.030	0.030	415	415
	L290	-	-	1.25	0.030	0.030	415	415
	L320	-	-	1.25	0.030	0.030	435	435
GB/T 9711.1	L360	-	-	1.25	0.030	0.030	460	460
	L390	-	-	1.35	0.030	0.030	490	490
	L415	0.26	-	1.35	0.030	0.030	520	520
	L450	0.26	-	1.40	0.030	0.030	535	535
	L485	0.23	-	1.60	0.030	0.030	570	570
	Q195	0.12	0.30	0.50	0.035	0.040	315	315
	Q215B	0.15	0.35	1.20	0.045	0.045	335	335
	Q235B	0.20	0.35	1.40	0.045	0.045	370	370
	Q345B	0.20	0.50	1.70	0.035	0.035	470	470
	A	0.25	0.10	0.95	0.050	0.045	330	330
ASTMA53	B	0.30	0.10	1.20	0.050	0.045	415	415
	1	-	-	-	0.050	-	345	345
ASTMA252	2	-	-	-	0.050	-	414	414
	3	-	-	-	0.050	-	455	455
EN10217-1	P195TR1	0.13	0.35	0.70	0.025	0.020	320	320
	P195TR2	0.13	0.35	0.70	0.025	0.020	320	320
	P235TR1	0.16	0.35	1.20	0.025	0.020	360	360
	P235TR2	0.16	0.35	1.20	0.025	0.020	360	360
	P265TR1	0.20	0.40	1.40	0.025	0.020	410	410
	P265TR2	0.20	0.40	1.40	0.025	0.020	410	410
	P195GH	0.13	0.35	0.70	0.025	0.020	320	320
EN10217-2	P235GH	0.16	0.35	1.20	0.025	0.020	360	360
	P265GH	0.20	0.40	1.40	0.025	0.020	410	410
EN10217-5	P235GH	0.16	0.35	1.20	0.025	0.020	360	360
	P265GH	0.20	0.40	1.40	0.025	0.020	410	410
EN10219-1	S235JRH	0.17	-	1.40	0.040	0.040	360	360
	S275JRH	0.20	-	1.50	0.035	0.035	410	410
	S275J2H	0.20	-	1.50	0.030	0.030	410	410
	S355JRH	0.22	0.55	1.60	0.035	0.035	470	470
	S355J2H	0.22	0.55	1.60	0.030	0.030	470	470
	S355K2H	0.22	0.55	1.60	0.030	0.030	470	470
	S355K2H	0.22	0.55	1.60	0.030	0.030	470	470

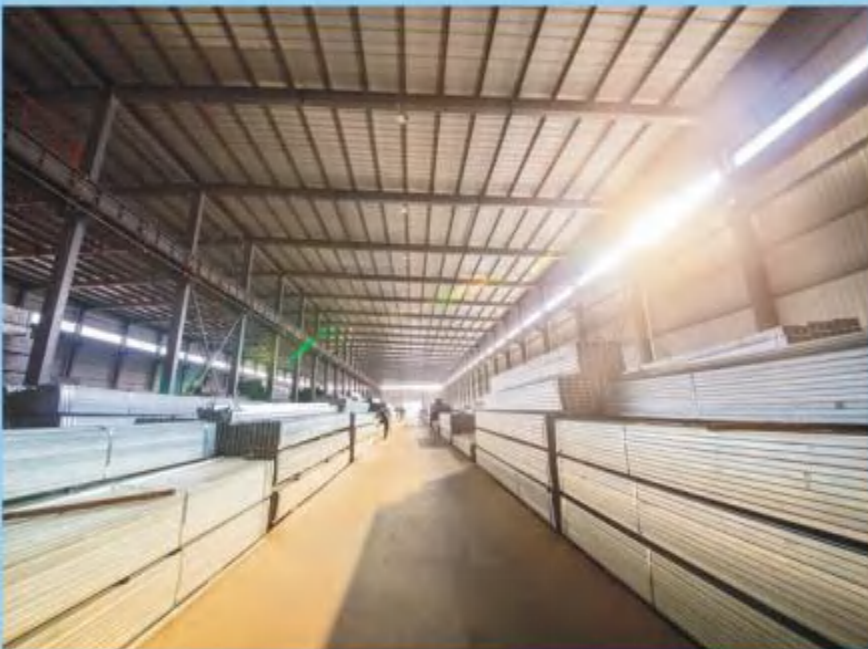
Tolerance of Outside Diameter and Wall Thickness

Standard	Tolerance of Pipe Body		Tolerance of Pipe End		Tolerance of Wall Thickness	
	Out Diameter	Tolerance	Out Diameter	Tolerance		
GB/T3091	OD ≤ 48.3mm	≤ ±0.5	OD ≤ 48.3mm	-	≤ ±10%	
	48.3 < OD ≤ 273.1mm	≤ ±1.0%	48.3 < OD ≤ 273.1mm	-		
	273.1 < OD ≤ 508mm	≤ ±0.75%	273.1 < OD ≤ 508mm	-0.8 ~ +2.4		
	OD > 508mm	≤ ±1.0%	OD > 508mm	-0.8 ~ +3.2		
GB/T9711.1	OD ≤ 48.3mm	-0.79 ~ +0.41	-	-	OD ≤ 73	-12.5% ~ +20%
	60.3 < OD ≤ 457mm	≤ ±0.75%	OD ≤ 273.1mm	-0.4 ~ +1.66	88.9 < OD ≤ 457	-12.5% ~ +15%
	508 < OD ≤ 941mm	≤ ±1.0%	OD > 323.9	-0.79 ~ +2.38	OD > 508	-10.0% ~ +17.5%
	OD > 941mm	≤ ±1.0%	-	-	-	-
GB/T9711.2	60 < OD ≤ 610mm	±0.75% OD - 3.0mm	60 < OD ≤ 610mm	±0.5% OD - ±1.6mm	4mm < WT < 25mm	±12.5% T - ±15.0% T
	610 < OD ≤ 1430mm	±0.5% OD - ±4mm	610 < OD ≤ 1430mm	±0.5% OD - ±1.6mm	WT ≥ 25mm	-3.00mm ~ +3.75mm
	OD > 1430mm	-	OD > 1430mm	-	-	-10.0% ~ +17.5%
	OD > 508mm	≤ ±0.75%	OD > 508mm	≤ ±0.75%	OD > 508mm	≤ ±12.5%
SY/T5037	OD > 508mm	≤ ±1.00%	OD > 508mm	≤ ±0.50%	OD > 508mm	≤ ±10.0%
	OD > 60.3	-0.8mm ~ +0.4mm	OD ≤ 168.3	-0.4mm ~ +1.6mm	WT ≤ 5.0	≤ ±0.5
	60.3 < OD ≤ 168.3	≤ ±0.75%	168.3 < OD ≤ 610	≤ ±1.6mm	5.0 < WT ≤ 15.0	≤ ±0.11
	168.3 < OD ≤ 610	≤ ±0.75%	610 < OD ≤ 1422	≤ ±1.6mm	T ≥ 15.0	≤ ±1.5
API 5L PSL1/PSL2	610 < OD ≤ 1422	≤ ±0.6mm	OD > 1422	-	-	-
	OD > 1422	-	-	-	-	-
	OD > 114.3	≤ ±0.79mm	OD > 114.3	≤ ±0.79mm	-	-
	OD > 114.3	-0.5% ~ -1.0%	OD > 114.3	-0.5% ~ -1.0%	-	-
API 5CT	OD > 114.3	≤ ±0.79mm	OD > 114.3	≤ ±0.79mm	-	-
	OD > 114.3	-0.5% ~ -1.0%	OD > 114.3	-0.5% ~ -1.0%	-	-
ASTMA53	≤ ±1.0%	-	≤ ±1.0%	-	≤ -12.5%	-
ASTMA252	≤ ±1.0%	-	≤ ±1.0%	-	≤ -12.5%	-

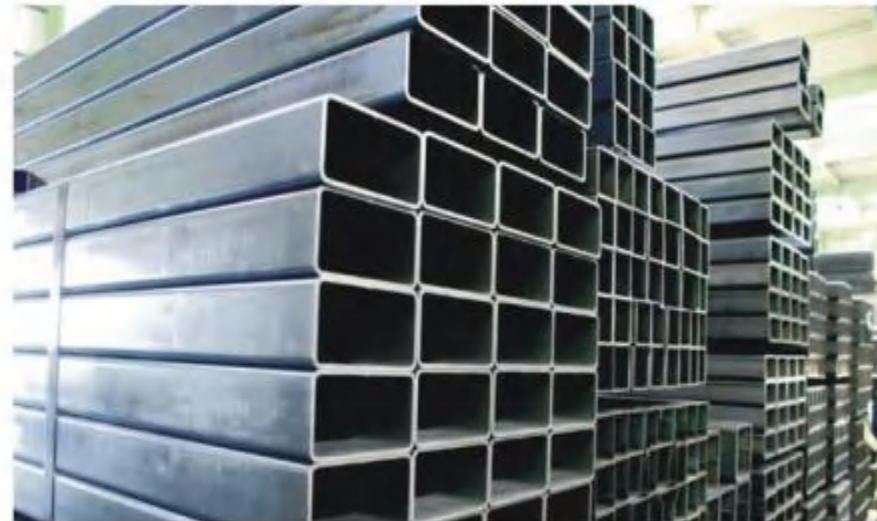
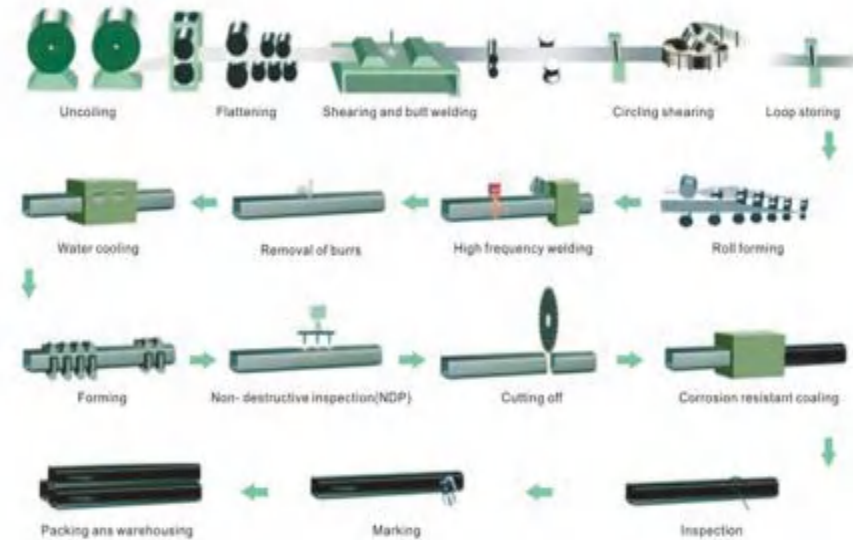
Hollow Section

Pipe Introduction

Product Name	Standard	Grade	OD	Thickness	Length	Main Usage
Square/rect- angular steel tube	ASTM A500 EN10219/EN10210 JIS G3466	Gr.A, GR.B, GR.C, GR.D; S235JRH; S275JRH; S275J2H; S355J0H; S355J2H; S355K2H STKR 400; STKR490	10*20mm- 1000*1200mm	0.5-40mm	0.1-18m	Construction steel structure



Square/Rectangular Welded Pipe Manufacturing



Galvanized Steel Pipe

Type:

1. Pre-painted (zinc: 60-120G/M2)
2. Hot-dipped galvanized (zinc: 120-300G/M2)
3. Cold-dipped galvanized (zinc: 10-50G/M2)

Steel Grade: Q195, Q215, Q235, Q345, S235JR, S275JR, STK400, STK490

Standard: GB/T 3091, BS1387, EN39, EN1139, ASTM A53, JIS G3446

Out Diameter: 21.3 - 610mm

Wall Thickness: 0.8 - 22mm

Length: Random Length, Fixed Length, SRL, DRL, as required

Use: For low pressure liquid delivery such as water, gas and oil; construction scaffolding

End: Plain end or beveled end, threaded end

Packing: Steel strips with plastic water-proof package

Test: Chemical Component Analysis, Mechanical Properties (Ultimate tensile strength, Yield strength, Elongation), Technical Properties (Flattening Test, Flaring Test, Bending Test, Hardness Test, Blow Test, Impact Test etc), Exterior Size Inspection.

Mill Test Certificate: EN 10204/3.1B



Pipe Fittings

Steel Elbow:

Material: Carbon Steel, Stainless Steel,

Size: 1/2" - 124"

WT: SCH10-SCH160

Standard: ANSI, ASME ASTM, DIN and JIS, etc.

Packaging Detail: Wooden case or wooden pallets or as customer's request.



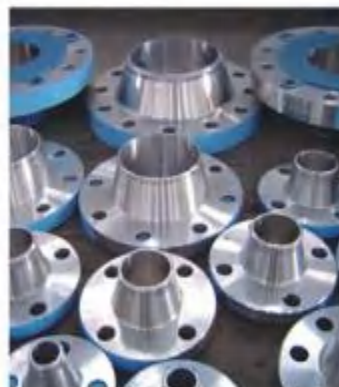
Steel Flange:

Material: Carbon Steel, Stainless Steel.

Dimension: 1/2" - 124"

Manufacture Standard: ANSI, ISO, JIS, DIN, BS, GB, SH, HG, QOST, ETC, ASTM A105 / A350 / A694 / A182.

Packaging Detail: Plywood pallet or cases, according to client's requirement.



Steel Valves:

Material: Carbon Steel, Stainless Steel.
Dimension: 1"-24" DN40-DN600
Usage: Water, steam, oil products(carbon steel valve)
sell the sour kind(stainless steel valve)



Steel Reducer:

OD: 1/2"-124"
Size : 1/2"-24"(seamless pipes)
Material: ASTM A106/A53, API 5L, ASTM A192, DIN17175 ST35.8/37, DIN1629 ST52, ASTM A210, ASTM A335, ASTM A179 .
Standard: API, ABS, BV, ISO9001:2000, ISO9002
Packaging Detail: Standard seaworthy packing or as customers requirement



Steel Tee:

Material: Carbon Steel
Size: 1/2"-48"(DN15-DN1200)
Surface: Black paint, anti rust oil, hot-dipped galvanized
Type: Seam or seamless
Application: Petroleum, chemical, power, gas, metallurgy, shipbuilding, construction, etc



Coatings

Anticorrosive steel pipe:
Mainly used in petroleum, chemical, natural gas, heating, sewage treatment, water, and other pipeline project fields.



Available range		
External Anticorrosive Coating	Anticorrosive type	Single layer FBE coating ; double FBE coating ; 2LPE/2LPP coating ; 3LPE/3LPP coating; cementweight coating ; insulation coating ; asphalt coating
	Standard	SY/T 0315; CAN/CSA Z245.20; DEP 31.40.30.32-Gen;ISO 21809; API RP 5L9; Q/CNPC 38; SY/T 0413; GB/T23257; DIN 30670; CAN/CSA Z245.21; NF A49-710; NF A49-711; Q/HS 3017; SY/T0415; C/JT 114; EN 253; BS 534
Internal Anticorrosive Coating	Anticorrosive type	Liquid epoxy coating ; single layer FBE coating ; cement coating; asphalt coating
	Standard	API RP 5L2; DEP 31.40.30.35-GEN; API RP 5L7; BS 534; AWWA C205





Pipe Protection

Pipe-end protection is advisable in case the pipe-ends are bevelled at the pipe manufacturer. In the case of overseas transport, there is an especially increased risk of damaged pipe-ends. This is caused by extra handling procedures in ports and shifting of the pipes onboard vessels.

Pipe Transport

Pipes need to be transported between parties involved in the supply chain. This is done by truck, train and/or vessel.



Pipe Handling

Pipes are handled multiple times in the supply chain, for example in ports and storage yards. By handling we mean lifting of pipes and loading to or unloading from trailers, train wagons or vessels. Most damages to pipe ends, surfaces and coatings occur during handling procedures due to a combination of inadequate equipment and poor personnel awareness.

Pipe Storage

Pipes are stored a number of times before they reach their destination. During storage the pipe coating is among other things subject to high pressure, ultra-violet (UV) degradation, design of bottom support, and contamination. In this paragraph the impact of these influences on the pipe coating is examined.



Raw Materials

Bar



With the features of high level purity, precise chemical composition control, high reduction ratio, high dimensional accuracy and excellent surface quality, the products are mainly used to manufacture the axle shaft, gas cylinder and plastic mould, etc.

Carbon steel



Carbon steel is steel where the main interstitial alloying constituent is carbon in the range of 0.12-2.0%. Suitable for nominal pressure $PN \leq 32.0\text{MPa}$, temperature $-30\sim 425\text{ }^{\circ}\text{C}$ water, steam, air, hydrogen, ammonia, nitrogen and petroleum products, and other media.

Heavy plate



Heavy plates are mainly used in shipbuilding, offshore platform, boiler, pressure vessel, pipeline, high building, bridge and heavy duty trucks, etc.

Alloy steel



Alloy steel is often subdivided into two groups: high alloy steels and low alloy steels. The difference between the two is defined somewhat arbitrarily. However, most agree that any steel that is alloyed with more than eight percent of its weight being other elements beside iron and carbon, is high alloy steel.

HR steel sheet



With the excellent properties such as high strength, good toughness, easy machinability and good weldability, Baosteel's hot-rolled steel products are widely used in ship, automobile, bridge, building, machinery and pressure vessel and other industrial applications.

Stainless steel



Stainless steel does not readily corrode, rust or stain with water as ordinary steel does, but despite the name it is not fully stain-proof, most notably under low oxygen, high salinity, or poor circulation environments. It is also called corrosion-resistant steel or CRES when the alloy type and grade are not detailed, particularly in the aviation industry.

CR steel sheet



CR steel sheets have good processability, with good flatness and excellent surface, are available with different thickness and width combinations; are mainly used to manufacture the high value-added products in automotive and appliance, beverage packaging, electronic, electrical motor and building etc.

Black steel



Black steel is a term given to steel pipe with a black oxide scale on the surface. This black oxide scale is formed when the pipe is forged and is typically sealed with a protective oil to prevent corrosion. Because of this oxide scale and protective film, black steel pipe requires little maintenance and is used for a wide variety of applications, including in water, steam, air and gas services.



Bridge construction



Environmental project



Mineral exploration



Offshore engineering



Gas exploration



Hydraulic system



Oil refinery



Pipeline for NICO



Hydroelectricity



Industrial exhaust



Shipbuilding



Sewage treatment



Liquefied gas



Marine engineering



Thermal power plants



West-east gas pipeline

