

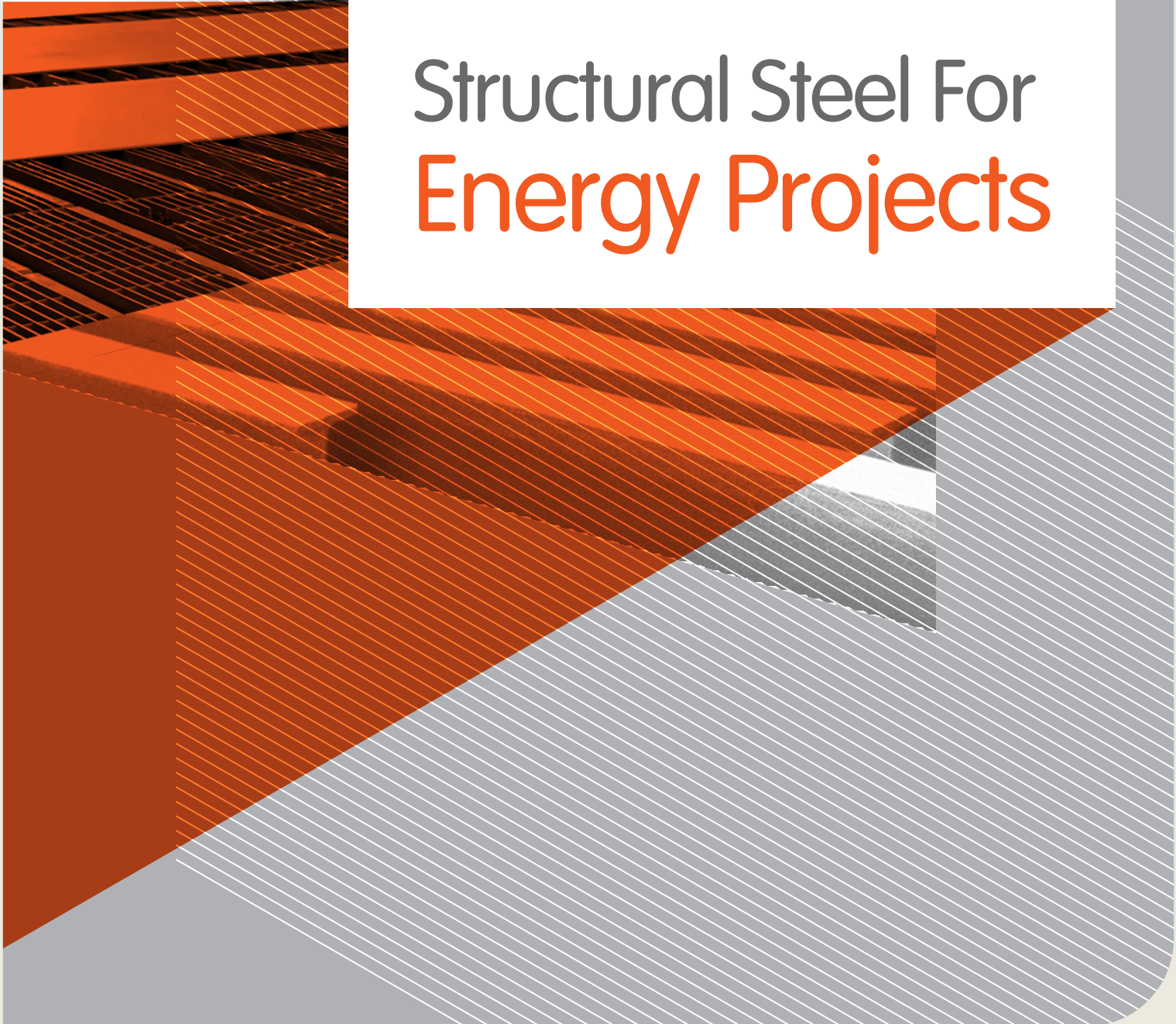
Energy Projects



ArcelorMittal



Structural Steel For Energy Projects





Our Mission

To be the preferred supply partner of complete & customized steel solutions for the highly demanding energy sector by providing quality products in the shortest lead time. Our solutions are always near you as we have stocks in Dubai, Singapore, the Netherlands and Nigeria.



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High Yield Seamless Pipes

(API 5L X52/L360 PSL 2, EN10225-3 S355NLHHO, Norsok Y22)

Size (inch)	Schedule	Diameter (mm)	Wall Thickness (mm)	Wall Thickness (in)	Length (mm)	Unit Weight (kg/mtr)	Weight/Piece (MT)
1	STD / 40	33.4	3.38	0.133	12000	2.5	0.030
	XS / 80	33.4	4.55	0.179	12000	3.23	0.039
1½	STD / 40	48.3	3.68	0.145	12000	4.05	0.0486
	XS / 80	48.3	5.08	0.200	12000	5.41	0.0649
2	STD / 40	60.3	3.91	0.154	12000	5.44	0.0653
	XS / 80	60.3	5.54	0.218	12000	7.48	0.0898
3	STD / 40	88.9	5.49	0.216	12000	11.29	0.136
	XS / 80	88.9	7.62	0.300	12000	15.28	0.183
4	STD / 40	114.3	6.02	0.237	12000	16.08	0.193
		114.3	6.35	0.250	12000	16.91	0.203
		114.3	7.92	0.312	12000	20.78	0.249
	XS / 80	114.3	8.56	0.337	12000	22.32	0.268
	XXS	114.3	17.12	0.674	12000	41.04	0.492
5		141.3	6.30	0.248	12000	20.98	0.252
	STD / 40	141.3	6.55	0.258	12000	21.77	0.261
	XS / 80	141.3	9.53	0.375	12000	30.97	0.372
	120	141.3	12.70	0.500	12000	40.28	0.483
	XXS	141.3	19.10	0.752	12000	57.57	0.691
6	STD / 40	168.3	7.11	0.280	12000	28.27	0.339
		168.3	8.20	0.323	12000	32.38	0.389
		168.3	9.53	0.375	12000	37.32	0.448
	XS / 80	168.3	10.97	0.432	12000	42.57	0.511
		168.3	12.70	0.500	12000	48.74	0.585
	120	168.3	14.27	0.562	12000	54.21	0.651
	160	168.3	18.26	0.718	12000	67.57	0.811
	XXS	168.3	21.95	0.864	12000	79.23	0.951
8	STD / 40	219.1	8.18	0.322	12000	42.55	0.511
	STD / 40	219.1	8.20	0.323	12000	42.65	0.512
		219.1	9.53	0.375	12000	49.26	0.591
	60	219.1	10.31	0.406	12000	53.09	0.637
	XS / 80	219.1	12.70	0.500	12000	64.65	0.776
		219.1	15.90	0.626	12000	79.69	0.956
	120	219.1	18.26	0.719	12000	90.45	1.085
		219.1	19.10	0.752	12000	94.22	1.131
	140	219.1	20.62	0.812	12000	100.94	1.211
	XXS	219.1	22.23	0.875	12000	107.94	1.295
10	160	219.1	23.01	0.906	12000	111.29	1.335
		219.1	25.40	1.000	12000	121.35	1.456
	STD / 40	273.1	9.27	0.365	12000	60.32	0.724
	STD / 40	273.1	9.30	0.366	12000	60.51	0.726
		273.1	9.53	0.375	12000	61.95	0.743
	XS / 60	273.1	12.70	0.500	12000	81.57	0.979
		273.1	15.90	0.626	12000	100.87	1.210
	100	273.1	18.26	0.719	12000	114.77	1.377
		273.1	19.10	0.752	12000	119.66	1.436
	120	273.1	21.44	0.844	12000	133.08	1.597
10		273.1	22.23	0.875	12000	137.55	1.651
	140 / XXS	273.1	25.40	1.000	12000	155.18	1.862
	160	273.1	28.58	1.125	6000	172.37	1.034

High Yield Seamless Pipes

(API 5L X52/L360 PSL 2, EN10225-3 S355NLHHO, Norsok Y22)

Size (inch)	Schedule	Diameter (mm)	Wall Thickness (mm)	Wall Thickness (in)	Length (mm)	Unit/Weight (kg/mtr)	Weight/Piece (MT)
12	STD	323.9	9.53	0.375	12000	73.89	0.887
	XS	323.9	12.70	0.500	12000	97.48	1.170
	60	323.9	14.27	0.560	12000	108.98	1.308
		323.9	15.90	0.626	12000	120.79	1.449
	80	323.9	17.48	0.688	12000	132.11	1.585
		323.9	19.10	0.752	12000	143.59	1.723
	100	323.9	21.44	0.844	12000	159.94	1.919
	120 /XXS	323.9	25.40	1.000	12000	187.01	2.244
14	160	323.9	33.32	1.312	6000	238.81	1.433
	STD / 30	355.6	9.53	0.375	12000	81.35	0.976
	XS	355.6	12.70	0.500	12000	107.41	1.289
		355.6	15.90	0.626	12000	133.22	1.599
	80	355.6	19.10	0.752	12000	158.52	1.902
	100	355.6	23.83	0.938	12000	195.00	2.340
		355.6	25.40	1.000	12000	206.86	2.482
		355.6	38.10	1.500	6000	298.36	1.790
16	STD / 30	406.4	9.53	0.375	12000	93.29	1.119
	XS / 40	406.4	12.70	0.500	12000	123.32	1.480
		406.4	15.90	0.626	12000	153.14	1.838
	60	406.4	16.66	0.656	12000	160.15	1.922
		406.4	19.10	0.752	12000	182.46	2.189
	80	406.4	21.44	0.844	12000	203.57	2.443
		406.4	25.40	1.000	12000	238.69	2.864
	100	406.4	26.19	1.031	12000	245.60	2.947
18	XS	457.2	12.70	0.500	12000	139.24	1.671
	60	457.2	19.10	0.752	8000	206.39	1.651
		457.2	25.40	1.000	7000	270.52	1.894
		457.2	38.1	1.500	7000	393.79	2.756
20	XS/ 30	508.0	12.70	0.500	12000	155.15	1.862
		508.0	25.40	1.000	12000	302.34	3.628
24		610	25.4	1.000	7000	366.19	2.563
		610	31.8	1.500	7000	453.45	3.174

Supply Condition

Origin	ArcelorMittal Tubular Products Roman (Romania)	ArcelorMittal Tubular Products Jubail (Saudi Arabia)	Nippon Steel Corporation (Japan)	HengYang Valin Steel Tube Co. (China)
Specification:	APL 5L X52/L360 PSL 2 EN10225-3 S355NLHHO Norsok Y22	API 5L X52/L360 PSL 2	API 5L X52/L360 QO PSL2	API 5L X52/L360 PSL 2
Certificate:	Roman: EN10204, 3.2	EN10204, 3.2 (ABS)	EN10204, 3.2 (ABS)	EN10204, 3.2 (ABS)
Charpy Value:	Min 27J at -50°C (T) Min 50J at -50°C (L)	Min 34J at -40°C (T)	Min 34J at -50°C (T)	Min 34J at -40°C (T)
Heat Treatment:	Normalized	Normalized	Q & T	Normalized / Q & T
Length:	7000mm - 12000mm	11800mm	12000mm	6000mm, 12000mm

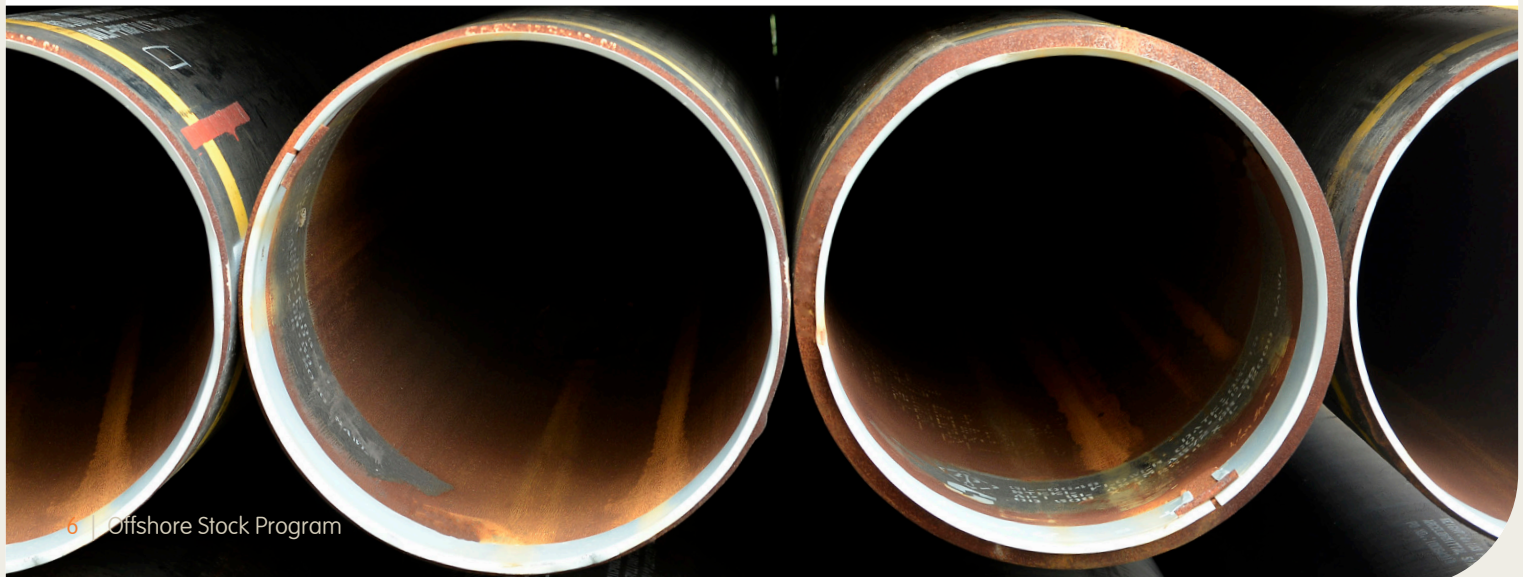
High Yield SAW Pipes

(API 5L X52/L360, X56/L390, X65/L450 PSL 2)

Size (inch)	Schedule	Diameter (mm)	Wall Thickness (mm)	Wall Thickness (in)	Length (mm)	Unit Weight (kg/mtr)	Weight/Piece (MT)
16	XS/ 40	406.4	12.70	0.500	12000	123.32	1.480
		406.4	15.90	0.626	12000	153.14	1.838
		406.4	19.10	0.752	12000	182.46	2.189
18	80	406.4	21.44	0.844	12000	203.57	2.443
	XS	457.2	12.70	0.500	12000	139.24	1.671
		457.2	15.90	0.626	12000	173.06	2.077
18	60	457.2	19.10	0.752	12000	206.39	2.477
		457.2	25.40	1.000	12000	270.52	3.246
		457.2	31.80	1.252	12000	333.66	4.004
20	XS/ 30	508.0	12.70	0.500	12000	155.15	1.862
		508.0	15.90	0.626	12000	192.99	2.316
		508.0	19.10	0.752	12000	230.32	2.764
20		508.0	25.40	1.000	12000	302.34	3.628
		508.0	31.80	1.252	12000	373.50	4.482
		508.0	38.10	1.500	8861	537.43	4.762
24	XS	610.0	12.70	0.500	12000	187.10	2.245
		610.0	15.90	0.626	12000	232.99	2.796
		610.0	19.10	0.752	12000	278.37	3.340
24		610.0	25.40	1.000	12000	366.24	4.395
		610.0	31.80	1.252	12000	453.50	5.442
		610.0	38.10	1.500	8861	537.43	4.762
26		660.0	25.40	1.000	12000	397.57	4.771

Supply Condition

Origin	Korea LSAW Pipe Manufacturers	Nippon Steel Corporation (Japan)	JFE
Specification:	API 5L X52/L360, X65/L450, PSL 2 with supplementary tests	API 5L X52/L360, X56/L390, X65/L450 PSL 2 with supplementary tests	API 5L X52/L360 PSL2 with supplementary tests
Certificate:	EN10204, 3.2 (ABS)	EN10204, 3.2 (ABS)	EN10204, 3.2 (ABS)
Charpy Value:	Min 27J at -20°C (X52/L360) Min 45J at -40°C (X65/L450)	Min 45J at -40°C	Min 41J at -40°C
Heat Treatment:	TMCP	TMCP	TMCP



High Yield Offshore Plates

(API / EN / Norsok)

Thickness (mm)	Width x Length (mm)				
8	2050 x 12000	2438 x 9144	2500 x 12000		3050 x 12000
10	2050 x 12000	2438 x 9144	2500 x 12000	3050 x 9144	3050 x 12000
12	2050 x 12000	2438 x 9144	2500 x 12000	3050 x 9144	3050 x 12000
15	2050 x 12000		2500 x 12000		3050 x 12000
16	2050 x 12000	2438 x 9144	2500 x 12000	3050 x 9144	3050 x 12000
18	2050 x 12000		2500 x 12000		3050 x 12000
20	2050 x 12000	2438 x 9144	2500 x 12000	3050 x 9144	3050 x 12000
25	2050 x 12000	2438 x 9144	2500 x 12000	3050 x 9144	3050 x 12000
30	2050 x 12000	2438 x 9144	2500 x 12000	3050 x 9144	3050 x 12000
32		2438 x 9144		3050 x 9144	3050 x 12000
35	2050 x 12000	2438 x 9144	2500 x 12000	3050 x 9144	3050 x 12000
40	2050 x 12000	2438 x 9144	2500 x 12000	3050 x 9144	3050 x 12000
45	2050 x 12000	2438 x 9144	2500 x 12000	3050 x 9144	3050 x 12000
50	2050 x 12000	2438 x 9144	2500 x 12000	3050 x 9144	3050 x 12000
55		2438 x 9144	2500 x 12000	3050 x 9144	3050 x 12000
60	2050 x 12000	2438 x 9144	2500 x 12000	3050 x 9144	3050 x 12000
65			2500 x 12000		3050 x 12000
70	2050 x 12000	2438 x 9144	2500 x 12000		3050 x 12000
75		2438 x 9144	2500 x 12000		3050 x 12000
80	2050 x 12000				
85			2500 x 12000		3050 x 10000
90	2050 x 12000				3050 x 9000
100	2050 x 12000		2500 x 10000		3050 x 8000
110	2050 x 11000				
120	2050 x 10500		2500 x 8500		3050 x 7000
130	2050 x 10000		2500 x 8000		3050 x 6500
140	2050 x 9000		2500 x 7500		3050 x 6000
150	2050 x 8000		2500 x 7000		3050 x 5500

Supply Condition

Origin	ArcelorMittal Europe – Flat Products (Spain) Voestalpine Grobblech (Austria) Nippon Steel Corporation (Japan) Dillinger Hütte GTS (Germany) POSCO (Korea)		
Specification:	API	EN	Norsok
	2W Gr 50 API2H Gr50	EN10225-1 S355MLO EN10025 S355ML	M-120 MDS-Y20
	2W Gr 60	EN10225-1 S420MLO EN10025 S420ML	M-120 MDS-Y30
	2H Gr 50	EN10225-1 S460MLO EN10025 S460ML	M-120 MDS-Y40
Certificate:	EN10204, 3.2 (ABS / Lloyds / DNV)		
Charpy Value:	Min 41J at -40°C		
Heat Treatment:	TMCP / Normalized		
Through Thickness Properties (TTP):	Included for all plates 15 mm and above		
UT Test:	As per EN 10160 S2E3		



Boiler Quality Plates

ASTM/ ASME A/SA 516 Gr60/65/70 NACE MR0175

Thickness (mm)		Width (mm)		Length (mm)		Width (mm)		Length (mm)
6	x	2500	x	12000				
8	x	2500	x	12000				
10	x	2500	x	12000		3000	x	12000
10	x	2000	x	12000		3000	x	12000
12	x	2500	x	12000		3000	x	12000
12	x	2000	x	12000		3000	x	12000
14	x	2500	x	12000		3000	x	12000
15	x	2500	x	12000		3000	x	12000
16	x	2500	x	12000		3000	x	12000
16	x	2000	x	12000		3000	x	12000
18	x	2500	x	12000		3000	x	12000
18	x	2000	x	12000		3000	x	12000
20	x	2500	x	12000		3000	x	12000
20	x	2000	x	12000		3000	x	12000
22	x	2500	x	12000		3000	x	12000
25	x	2500	x	12000		3000	x	12000
25	x	2000	x	12000		3000	x	12000
28	x	2500	x	12000		3000	x	12000
30	x	2500	x	12000		3000	x	12000
32	x	2500	x	12000		3000	x	12000
35	x	2500	x	12000		3000	x	12000
40	x	2500	x	12000		3000	x	12000
50	x	2500	x	12000		3000	x	12000

Origin	NLMK Clabecq Belgium Ilseburger Germany
Specification:	ASTM/ ASME A/SA 516 Gr60/65/70 NACE MR0175
Certificate:	3.2 acc.to EN 10204 (LR / BV)
Heat Treatment:	Normalized
UT Test:	As per A578 Level C S1



HIC Tested Pressure Vessel Plates

ASTM/ ASME A/SA 516 Gr60/65/70 NACE 0175/

INDUSTEEL CARELSO HIC PREMIUM+

Thickness (mm)		Width (mm)		Length (mm)		Width (mm)		Length (mm)
6	x	2500	x	12000				
8	x	2500	x	12000				
10	x	2500	x	12000		3000	x	12000
10	x	2000	x	12000		3000	x	12000
12	x	2500	x	12000		3000	x	12000
12	x	2000	x	12000		3000	x	12000
14	x	2500	x	12000		3000	x	12000
15	x	2500	x	12000		3000	x	12000
16	x	2500	x	12000		3000	x	12000
16	x	2000	x	12000		3000	x	12000
18	x	2500	x	12000		3000	x	12000
18	x	2000	x	12000		3000	x	12000
20	x	2500	x	12000		3000	x	12000
20	x	2000	x	12000		3000	x	12000
22	x	2500	x	12000		3000	x	12000
25	x	2500	x	12000		3000	x	12000
25	x	2000	x	12000		3000	x	12000
28	x	2500	x	12000		3000	x	12000
30	x	2500	x	12000		3000	x	12000
32	x	2500	x	12000		3000	x	12000
35	x	2500	x	12000		3000	x	12000
40	x	2500	x	12000		3000	x	12000

Origin	ArcelorMittal Industeel Belgium (HIC Plates)
Specification:	ASTM/ASME A/SA 516 Gr60/65/70 INDUSTEEL CARELSO HIC PREMIUM+
Certificate:	3.2 acc.to EN 10204 (LR / BV)
Heat Treatment:	Normalized
UT Test:	As per A578 Level C S1

European Sections

(S355J2+M / EN 10025)

Section	kg / mtr	Section	kg / mtr	Section	kg / mtr
IPE 160	15.8	IPE 300	42.2	HEA 120	19.9
IPE 180	18.8	IPE 330	49.1	HEA 140	24.7
IPE 200	22.4	IPE 360	57.1	HEA 160	30.4
IPE 220	26.2	IPE 400	66.3	HEA 180	35.5
IPE 240	30.7	IPE 450	77.6	HEA 200	42.3
IPE 270	36.1	IPE 500	90.7	HEA 220	50.5
IPE 270	36.1	IPE 550	106	HEA 240	60.3
HEA 260	68.2	HEB 220	71.5	UPN 140	16.00
HEA 280	76.4	HEB 240	83.2	UPN 160	18.8
HEA 300	88.3	HEB 260	93	UPN 180	22
HEA 320	97.6	HEB 280	103	UPN 200	25.3
HEA 340	105	HEB 300	117	UPN 220	29.4
HEA 360	112	HEB 320	127	UPN 240	33.2
HEA 400	125	HEB 340	134	UPN 260	37.9
HEB 120	26.7	HEB 360	142	UPN 280	41.8
HEB 140	33.7	HEB 400	155	UPN 300	46.2
HEB 160	42.6	UPN 100	10.60	UPN 320	59.5
HEB 180	51.2	UPN 120	13.40	UPN 350	60.6
HEB 200	61.3				

Origin	ArcelorMittal Luxembourg ArcelorMittal Spain Emirates Steel UAE
Specification:	S355J2+M / EN 10025
Certificate:	3.1 acc.to EN 10204
Heat Treatment:	TMCP
Charpy Value:	Min 27J at -20°C



High Yield Offshore Sections

(EN10225-2 S355MLO, EN 10025 S355ML / Norsok Y26)

Section	kg / mtr
UNP 100	10.6
UNP 120	13.4
UNP 140	16
UNP 160	18.8
UNP 180	22
UNP 200	25.3
UNP 220	29.4
UNP 240	33.2
UNP 260	37.9
UNP 280	41.8
UNP 300	46.2
UNP 320	59.5
UNP 350	60.6
UNP 380	63.1
UNP 400	71.8

Section	length	kg / mtr
UPE 100	12000	9.82
UPE 120	12000	12.1
UPE 140	12000	14.5
UPE 160	12000	17
UPE 180	12000	19.7
UPE 200	12000	22.8
UPE 220	12000	26.6
UPE 240	12000	30.2
UPE 300	12000	44.4

Section	kg / mtr
IPE 100	8.1
IPE 120	10.4
IPE 140	12.9
IPE 160	15.8
IPE 180	18.8
IPE 200	22.4
IPE 220	26.2
IPE 240	30.7
IPE 270	36.1
IPE 300	42.2
IPE 330	49.1
IPE 360	57.1
IPE 400	66.3
IPE 450	77.6
IPE 500	90.7
IPE 550	106
IPE 600	122

Section	kg / mtr
HEA 100	16.7
HEA 120	19.9
HEA 140	24.7
HEA 160	30.4
HEA 180	35.5
HEA 200	42.3
HEA 220	50.5
HEA 240	60.3
HEA 260	68.2
HEA 280	76.4
HEA 300	88.3
HEA 320	97.6
HEA 340	105
HEA 360	112
HEA 400	125
HEA 450	140
HEA 500	155
HEA 550	166
HEA 600	178
HEA 650	190
HEA 700	204
HEA 800	224
HEA 900	252
HEA 1000	272

Section	kg / mtr
HEB 100	20.4
HEB 120	26.7
HEB 140	33.7
HEB 160	42.6
HEB 180	51.2
HEB 200	61.3
HEB 220	71.5
HEB 240	83.2
HEB 260	93
HEB 280	103
HEB 300	117
HEB 320	127
HEB 340	134
HEB 360	142
HEB 400	155
HEB 450	171
HEB 500	187
HEB 550	199
HEB 600	212
HEB 650	225
HEB 700	241
HEB 800	262
HEB 900	291
HEB 1000	314

Supply Condition

Origin	ArcelorMittal Long Carbon Europe (Luxembourg)
Specification:	EN10225-2 S355MLO EN 10025-1 S355ML Norsok M 120 – MDS Y 26
Certificate:	EN10204, 3.2 (Lloyds /DNVGL)
Charpy Value:	Min 27J at -50°C Min 50J at -40°C

Note: trading weights are theoretical based on 7.85kg/dm³

High Yield Offshore Sections

(EN10225-2 S355MLO, EN 10025 S355ML / Norsok Y26)

Section	kg / mtr	Section	kg / mtr	Section	kg / mtr
UC 152 X 152 X 23	23	UB 127 X 76 X 13	13	UB 610 X 229 X 101	101
UC 152 X 152 X 30	30	UB 152 X 89 X 16	16	UB 610 X 229 X 113	113
UC 152 X 152 X 37	37	UB 178 X 102 X 19	19	UB 610 X 229 X 125	125
UC 203 X 203 X 46	46.1	UB 203 X 102 X 23	23.1	UB 610 X 229 X 140	140
UC 203 X 203 X 52	52	UB 203 X 133 X 25	25.1	UB 610 X 305 X 149	149
UC 203 X 203 X 60	60	UB 203 X 133 X 30	30	UB 610 X 305 X 179	179
UC 203 X 203 X 71	71	UB 254 X 102 X 22	22	UB 610 X 305 X 238	238
UC 203 X 203 X 86	86.1	UB 254 X 102 X 25	25.2	UB 686 X 254 X 125	125
UC 254 X 254 X 73	73.1	UB 254 X 102 X 28	28.3	UB 686 X 254 X 140	140
UC 254 X 254 X 89	88.9	UB 254 X 146 X 31	31.1	UB 686 X 254 X 152	152
UC 254 X 254 X 107	107	UB 254 X 146 X 37	37	UB 686 X 254 X 170	170
UC 254 X 254 X 132	132	UB 254 X 146 X 43	43	UB 762 X 267 X 134	134
UC 254 X 254 X 167	167	UB 305 X 102 X 25	24.8	UB 762 X 267 X 147	147
UC 305 X 305 X 97	96.9	UB 305 X 102 X 28	28.2	UB 762 X 267 X 173	173
UC 305 X 305 X 118	118	UB 305 X 102 X 33	32.8	UB 762 X 267 X 197	197
UC 305 X 305 X 137	137	UB 305 X 127 X 37	37	UB 838 X 292 X 176	176
UC 305 X 305 X 158	158	UB 305 X 165 X 40	40.3	UB 838 X 292 X 194	194
UC 305 X 305 X 198	198	UB 305 X 127 X 42	41.9	UB 838 X 292 X 226	226
UC 305 X 305 X 240	240	UB 305 X 165 X 46	46.1	UB 914 X 305 X 201	201
UC 305 X 305 X 283	283	UB 305 X 127 X 48	48.1	UB 914 X 305 X 224	224
UC 356 X 368 X 129	129	UB 305 X 165 X 54	54	UB 914 X 305 X 253	253
UC 356 X 368 X 153	153	UB 356 X 127 X 33	33.1	UB 914 X 305 X 289	289
UC 356 X 368 X 177	177	UB 356 X 127 X 39	39.1		
UC 356 X 368 X 202	202	UB 356 X 171 X 45	45		
UC 356 X 406 X 235	235	UB 356 X 171 X 51	51		
UC 356 X 406 X 287	287	UB 356 X 171 X 57	57		
UC 356 X 406 X 340	340	UB 356 X 171 X 67	67.1		
UC 356 X 406 X 393	393	UB 406 X 140 X 39	39		
		UB 406 X 140 X 46	46		
		UB 406 X 178 X 54	54.1		
		UB 406 X 178 X 60	60.1		
		UB 406 X 178 X 67	67.1		
		UB 406 X 178 X 74	74.2		
		UB 457 X 152 X 52	52.3		
		UB 457 X 152 X 60	59.8		
		UB 457 X 152 X 67	67.2		
		UB 457 X 152 X 74	74.2		
		UB 457 X 152 X 82	82.1		
		UB 457 X 191 X 89	89.3		
		UB 457 X 191 X 98	98.3		
		UB 457 X 191 X 74	74.3		
		UB 457 X 191 X 82	82		
		UB 457 X 191 X 67	67.1		
		UB 533 X 210 X 82	82.2		
		UB 533 X 210 X 92	92.1		
		UB 533 X 210 X 101	101		
		UB 533 X 210 X 109	109		
		UB 533 X 210 X 122	122		

Useful Formulas / Conversions

Pipe Weight

$$\frac{(\text{Outside diameter in mm} - \text{Wall thickness in mm}) \times (\text{Wall thickness in mm} \times 3.142 \times 7.85)}{1000} = \frac{\text{kg}}{\text{Meter}}$$

Steel Plate Weight

$$(\text{Thickness in m} \times \text{Width in m} \times \text{Length in m}) \times 7.85 \text{ kg/m}^3 = \text{MT} / \text{Pce}$$

Meter to Feet

$$M \times 3.281$$

Inch to MM

$$Y \times 25.4$$

lb/ft to kg/m

$$Y \times 1.4882$$

ksi to N/mm²

$$\text{KSI} \times 6.89$$

Fahrenheit (°F) to Celsius (°C)

$$(\text{°F} - 32) / 1.8$$

Celsius (°C) to Fahrenheit (°F)

$$(\text{°C} \times 1.8) + 32$$

psi to MPa

$$\text{psi} / 145.0377$$

MPa to psi

$$\text{MPa} \times 145.0377$$

Joules to ft.lbf

$$\text{Joules} / 1.3558$$

ft.lbf to Joules

$$\text{ft.lbf} \times 1.3558$$

ksi to MPa

$$\text{ksi} / 0.1450377$$

MPa to N/mm²

$$1 \text{ MPa} = 1 \text{ N/mm}^2$$

Temperature Conversion

Celsius (°C)	Fahrenheit (°F)
20	68
0	32
-10	14
-20	-4
-30	-22
-40	-40
-50	-58
-60	-76
-80	-112

Comparison API 5L: PSL 1 versus PSL 2

The API 5L specification establishes requirements for two product specification levels (PSL 1 and PSL 2)¹. The two PSL designations define different levels of standard technical requirements. The table presented here summarizes the differences between the two levels:

Parameters	PSL 1	PSL 2
Steel grades	A25 - X70	B - X120
Dimensions	10,3 - 2032,0 mm	114,3 - 2032,0 mm
Pipe ends	Plain, threaded, bevelled, prepared for special couplings	Plain (unless otherwise agreed)
Welding process	All	All, except laser
Heat treatments (M,N or Q&T)	Not established	For all grades from B through X120
Chemistry defined	C/Mn/P/S	C/Si/Mn/P/S/V/Nb/Ti/CE ²
Max % C in seamless	0,28% for grades ≥ B	0,24% for N pipes, 0,18 for Q pipes, up to X65
Max % C in welded pipes	0,26% for grade B to X70	0,22% for grade BM to X56M, 0,12% for X60M to X80M
Max % P	0,030% for grade A to X70	0,025% for grade B to X80M/Q
Max % S	0,030% for grade A to X70	0,015% for grade B to X80M/Q
Carbon equivalent	Not required (only on purchaser's demand)	The maximum established for each grade
Maximum yield strength	Not established (minimum specified)	The maximum established for each grade
Maximum tensile stress	Not established (minimum specified)	The maximum established for each grade
Charpy impact test	Not required (only on purchaser's demand)	Required for all grades at a min. of 0°C/32°F
Repair of body by welding	Allowed	Not allowed
Repair of weld by welding	Subject to agreement	Not allowed
Certification	When specified per 10.1.2	Mandatory as per 10.1.3

The above table is extracted from API Specification 5L, 45th Edition.

¹ Our stocks are all specified in (the higher) PSL 2 grade, killed and made according to fine grain practice.

² Carbon mass fraction (of product analysis) equal or less than 0,12%, the carbon equivalent shall be reported as CE_{pcm}.

Note:

Annexes with specific manufacturing or service requirements

- Annex B: Qualified manufacturing procedure for PSL 2 pipe

- Annex H: Sour services PSL 2 pipe

- Annex J: Offshore services PSL 2 pipe

Material Grade Comparison Chart

Category based on Yield Strength and Tensile Strength	CVN Temp		ASTM	API 5L	API 2W / 2H	EN 10225 Seamless Hollow Sections	EN 10025-2	EN 10025-3 (Normalized)	EN 10025-4 (TMCP)	ABS / BV / LR	DNV-GL
	°C	°F									
Yield Strength: ≥ 235 N/mm ² or MPa ≥ 36 ksi Tensile Strength: ≥ 360 N/mm ² or MPa ≥ 52 ksi	None	None	A36 A53, A106 Gr. B	L245 / Gr. B (PSL 1) L290 / X42 (PSL 1)			S235 JR			Gr. A	NV A
	+ 20 °C	68 °F									
	0 °C	32 °F									
	- 20 °C	- 4 °F									
	- 40 °C	- 40 °F									
Yield Strength: ≥ 275 N/mm ² or MPa ≥ 40 ksi Tensile Strength: ≥ 430 N/mm ² or MPa ≥ 62 ksi	None	None	A333 Gr. 6	L320 / X46 (PSL 1)			S275 JR			Gr. B	NV B
	+ 20 °C	68 °F									
	0 °C	32 °F									
	- 20 °C	- 4 °F									
	- 40 °C	- 40 °F									
Yield Strength: ≥ 355 N/mm ² or MPa ≥ 50 ksi Tensile Strength: ≥ 460 N/mm ² or MPa ≥ 67 ksi	None	None	A572 Gr. 50	L360 / X52 (PSL 1)			S355 JR			AH 36	NV A36
	+ 20 °C	68 °F									
	0 °C	32 °F									
	- 20 °C	- 4 °F									
	- 40 °C	- 40 °F									
Yield Strength: ≥ 420 N/mm ² or MPa ≥ 60 ksi Tensile Strength: ≥ 520 N/mm ² or MPa ≥ 75 ksi	None	None	A572 Gr. 60	L415 / X60 (PSL 1)			S355 J2 or K2			DH 36	NV D36
	0 °C	32 °F									
	- 20 °C	- 4 °F									
	- 40 °C	- 40 °F									
	- 50 °C	- 58 °F									
Yield Strength: ≥ 450 N/mm ² or MPa ≥ 65 ksi Tensile Strength: ≥ 550 N/mm ² or MPa ≥ 80 ksi	None	None	A333 Gr. 6	L450 / X65 (PSL 1)			S450 J0			Gr. D	NV D
	0 °C	32 °F									
	- 20 °C	- 4 °F									
	- 40 °C	- 40 °F									
	- 50 °C	- 58 °F									
Yield Strength: ≥ 420 N/mm ² or MPa ≥ 60 ksi Tensile Strength: ≥ 520 N/mm ² or MPa ≥ 75 ksi	None	None	A572 Gr. 60	L415 / X60 (PSL 2)			S355 J2 or K2			Gr. E	NV E
	0 °C	32 °F									
	- 20 °C	- 4 °F									
	- 40 °C	- 40 °F									
	- 60 °C	- 76 °F									
Yield Strength: ≥ 420 N/mm ² or MPa ≥ 60 ksi Tensile Strength: ≥ 520 N/mm ² or MPa ≥ 75 ksi	None	None	A572 Gr. 60	L415 / X60 (PSL 1)			S355 NL				NV F36
	0 °C	32 °F									
	- 20 °C	- 4 °F									
	- 40 °C	- 40 °F									
	- 60 °C	- 76 °F									
Yield Strength: ≥ 420 N/mm ² or MPa ≥ 60 ksi Tensile Strength: ≥ 520 N/mm ² or MPa ≥ 75 ksi	None	None	A572 Gr. 60	L415 / X60 (PSL 2)			S420 N			AH 40	NV A40
	0 °C	32 °F									
	- 20 °C	- 4 °F									
	- 40 °C	- 40 °F									
	- 50 °C	- 58 °F									
Yield Strength: ≥ 450 N/mm ² or MPa ≥ 65 ksi Tensile Strength: ≥ 550 N/mm ² or MPa ≥ 80 ksi	None	None	A572 Gr. 60	L450 / X65 (PSL 1)			S420 NL			EH 40	NV E40
	0 °C	32 °F									
	- 20 °C	- 4 °F									
	- 40 °C	- 40 °F									
	- 50 °C	- 58 °F									
Yield Strength: ≥ 450 N/mm ² or MPa ≥ 65 ksi Tensile Strength: ≥ 550 N/mm ² or MPa ≥ 80 ksi	None	None	A572 Gr. 60	L450 / X65 (PSL 2)			S460 N			FH 40	NV F40
	0 °C	32 °F									
	- 20 °C	- 4 °F									
	- 40 °C	- 40 °F									
	- 50 °C	- 58 °F									
Yield Strength: ≥ 450 N/mm ² or MPa ≥ 65 ksi Tensile Strength: ≥ 550 N/mm ² or MPa ≥ 80 ksi	None	None	A572 Gr. 60	L450 / X65 (PSL 1)			S460 NL				
	0 °C	32 °F									
	- 20 °C	- 4 °F									
	- 40 °C	- 40 °F									
	- 50 °C	- 58 °F									
Yield Strength: ≥ 450 N/mm ² or MPa ≥ 65 ksi Tensile Strength: ≥ 550 N/mm ² or MPa ≥ 80 ksi	None	None	A572 Gr. 60	L450 / X65 (PSL 2)			S460 NL				
	0 °C	32 °F									
	- 20 °C	- 4 °F									
	- 40 °C	- 40 °F									
	- 50 °C	- 58 °F									



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