

# LINE PIPE



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# LINE PIPE

Steel pipe with longitudinal welding for the conduction of fluids in the oil and natural gas industry. Cold or hot manufacturing process that meets national and international standards for fluid handling at the pressures required in the petroleum industry. The manufacturing processes are monitored by strict quality controls that through different tests ensure the quality of the finished product such as: Electromagnetic Tests (Eddy currents), the Hydrostatic Test, Ultrasound (UT). Certified by the American Petroleum Institute (API).

## CHARACTERISTICS

- Diameters from 15 to 150 mm (1/2 "to 6").
- API 5L PSL1 / PSL2 Annex H (Bitter Gas), maximum grade in X52.
- Length of 6.40m, 7.62m and 12.8 m.
- With smooth ends, beveled or threaded and coupling.
- Resistant to traffic corrosion.

## USES AND APPLICATIONS

- Oil and gas pipelines.
- Conduction of fluids with high requirements, such as: turbosine, diesel, gasoline, etc.

# TECHNICAL INFORMATION

Dimensions and characteristics API 5L PSL-1 / PSL-2, PSL-2-for sour service.  
Available in measures 6.40 m, 7.62 m and 12.80 m..

DIAMETER		SCHEDULE	EXTERNAL DIAMETER		THICKNESS		WEIGHT		PER PIPE		PER BUNDLE		PACKING
mm	in		mm	in	mm	in	Kg / m	Lb / ft	Kg x 6.40m	Lb x 21 ft	Kg x Bundle	Lb x Bundle	Pipes x bundle
15	1/2	STD	21.34	0.840	2.77	0.109	1.27	0.85	8.11	17.87	974	2145	120
		XS	21.34	0.840	3.73	0.147	1.62	1.09	10.37	22.85	1245	2742	120
20	3/4	STD	26.67	1.050	2.87	0.113	1.68	1.13	10.78	23.75	906	1995	84
		XS	26.67	1.050	3.91	0.154	2.20	1.47	14.05	30.95	1180	2600	84
25	1	STD	33.40	1.315	3.38	0.133	2.50	1.68	16.01	35.26	960	2116	60
		XS	33.40	1.315	4.55	0.179	3.24	2.17	20.70	45.61	1242	2737	60
32	1 1/4	STD	42.16	1.660	3.56	0.140	3.39	2.27	21.67	47.73	910	2005	42
		XS	42.16	1.660	4.85	0.191	4.46	3.00	28.57	62.94	1200	2643	42
40	1 1/2	STD	48.26	1.900	3.68	0.145	4.05	2.72	25.91	57.08	933	2055	36
		XS	48.26	1.900	5.08	0.200	5.41	3.63	34.62	76.26	1246	2745	36
50	2	STD	60.33	2.375	3.91	0.154	5.44	3.65	34.83	76.72	905	1995	26
			60.33	2.375	4.78	0.188	6.54	4.39	41.86	92.22	1088	2398	26
		XS	60.33	2.375	5.54	0.218	7.48	5.02	47.88	105.47	1245	2742	26
65	2 1/2		73.03	2.875	3.96	0.156	6.75	4.53	43.19	95.14	777	1713	18
			73.03	2.875	4.78	0.188	8.04	5.40	51.44	113.31	926	2040	18
		STD	73.03	2.875	5.16	0.203	8.63	5.79	55.23	121.67	994	2190	18
			73.03	2.875	5.49	0.216	9.14	6.13	58.48	128.83	1053	2319	18
80	3		88.90	3.500	3.96	0.156	8.30	5.57	53.12	117.01	744	1638	14
			88.90	3.500	4.78	0.188	9.91	6.65	63.40	139.66	888	1955	14
		STD	88.90	3.500	5.49	0.216	11.29	7.58	72.23	159.11	1011	2228	14
100	4		114.30	4.500	3.96	0.156	10.78	7.24	69.00	152.00	690	1520	10
			114.30	4.500	4.78	0.188	12.90	8.66	82.54	181.83	825	1818	10
			114.30	4.500	5.56	0.219	14.92	10.01	95.46	210.29	955	2103	10
		STD	114.30	4.500	6.02	0.237	16.07	10.79	102.87	226.62	1029	2266	10

## Mechanical resistance API 5L PSL-1

	MINIMUM YIELD STRENGTH		MINIMUM TENSILE STRENGTH	
	Mpa	PSI (Lb/in <sup>2</sup> )	Mpa	PSI (Lb/in <sup>2</sup> )
A25 (L175)	175	25,400	310	45,000
A (L210)	210	30,500	335	48,600
B (L245)	245	35,500	415	60,200
X42 (L290)	290	42,100	415	60,200
X46 (L320)	320	46,400	435	63,100
X52 (L360)	360	52,200	460	66,700

## Chemical composition for API 5L PSL-1 with thickness ≤ 25 mm (0.984").

STEEL GRADE	C	Mn	P	S	V	Nb	Ti
	MAX <sup>b</sup>	MAX <sup>b</sup>	MAX	MAX	MAX	MAX	MAX
A25 (L175)	0.21	0.6	0.03	0.03	---	---	---
A (L210)	0.22	0.9	0.03	0.03	---	---	---
B (L245)	0.26	1.2	0.03	0.03	c,d	c,d	d
X42 (L290)	0.26	1.3	0.03	0.03	d	d	d
X46 (L320)	0.26	1.4	0.03	0.03	d	d	d
X52 (L360)	0.26	1.4	0.03	0.03	d	d	d
c Nb + V ≤ 0.06% d Nb + V + Ti ≤ 0.15%							
b For each reduction of 0.01% of the specified maximum C, an increase of 0.05% above the specified maximum manganese is allowed up to a maximum of 1.65% for grades ≥ L245 or B, but ≤ L360 or X52							

Pressure test for different specifications API 5L PSL-1.

DESIGNATION		SCHE-DULE	THICKNESS		HYDROSTATIC PRESSURE											
					A25 (L175)		A (L210)		B (L245)		X42 (L290)		X46 (L320)		X52 (L360)	
mm	in		mm	in	Kg/cm <sup>2</sup>	Lb/in <sup>2</sup>	Kg/cm <sup>2</sup>	Lb/in <sup>2</sup>	Kg/cm <sup>2</sup>	Lb/in <sup>2</sup>	Kg/cm <sup>2</sup>	Lb/in <sup>2</sup>	Kg/cm <sup>2</sup>	Lb/in <sup>2</sup>	Kg/cm <sup>2</sup>	Lb/in <sup>2</sup>
15	1/2	STD	2.8	0.109	49	700	49	700	49	700	209	2970	209	2970	209	2970
		XS	3.7	0.147	60	850	60	850	60	850	209	2970	209	2970	209	2970
20	3/4	STD	2.9	0.113	49	700	49	700	49	700	209	2970	209	2970	209	2970
		XS	3.9	0.154	60	850	60	850	60	850	209	2970	209	2970	209	2970
25	1	STD	3.4	0.133	49	700	49	700	49	700	209	2970	209	2970	209	2970
		XS	4.5	0.179	60	850	60	850	60	850	209	2970	209	2970	209	2970
32	1 1/4	STD	3.6	0.140	70	1000	70	1000	70	1000	209	2970	209	2970	209	2970
		XS	4.9	0.191	91	1300	105	1500	113	1600	209	2970	209	2970	209	2970
40	1 1/2	STD	3.7	0.145	70	1000	70	1000	70	1000	209	2970	209	2970	209	2970
		XS	5.1	0.200	91	1300	105	1500	113	1600	209	2970	209	2970	209	2970
50	2	STD	3.9	0.154	70	1000	70	1000	70	1000	209	2970	209	2970	209	2970
			4.8	0.188	169	2410	174	2470	174	2470	209	2970	209	2970	209	2970
		XS	5.5	0.218	91	1300	174	2470	174	2470	209	2970	209	2970	209	2970
65	2 1/2		4.0	0.156	174	2470	141	2002	164	2335	195	2770	209	2970	209	2970
			4.8	0.188	141	2002	169	2402	174	2470	209	2970	209	2970	209	2970
		STD	5.2	0.203	70	1000	70	1000	70	1000	209	2970	209	2970	209	2970
			5.5	0.216	161	2295	174	2470	174	2470	209	2970	209	2970	209	2970
80	3		4.0	0.156	96	1372	116	1645	135	1919	160	2277	176	2509	209	2970
			4.8	0.188	116	1645	139	1974	162	2302	192	2727	209	2970	209	2970
		STD	5.5	0.216	70	1000	70	1000	70	1000	209	2970	209	2970	209	2970
100	4		4.8	0.188	90	1279	108	1535	125	1784	149	2118	164	2335	185	2625
			5.6	0.219	105	1492	126	1791	147	2089	173	2466	192	2727	209	2970
		STD	6.0	0.237	84	1200	84	1200	91	1300	187	2654	206	2930	209	2970

Mechanical resistance API 5L PSL-2, PSL-2-for sour service

			MINIMUM YIELD STRENGTH		MINIMUM TENSILE STRENGTH	
			Mpa	PSI (Lb/in <sup>2</sup> )	Mpa	PSI (Lb/in <sup>2</sup> )
BN (L245N)	BNS (L245NS)	Min - Max	245 - 450	35,500 - 65,300	415 - 655	60,200 - 95,000
X42N (L290N)	X42N2 (L290NS)	Min - Max	290 - 495	42,100 - 71,800	415 - 655	60,200 - 95,000
X46N (L320N)	X46NS (L320NS)	Min - Max	320 - 525	46,400 - 76,100	435 - 655	63,100 - 95,000
X52N (L360N)	X52NS (L360NS)	Min - Max	360 - 530	52,200 - 76,900	460 - 760	66,700 - 110,200

Chemical composition for API 5L PSL-2 with thickness ≤ 25 mm (0.984 in)

STEEL GRADE	% MAX MASS FRACTION FOR CAST AND PRODUCT ANALYSIS									% MAX CARBON EQUIVALENT <sup>A</sup>	
	C <sup>b</sup>	Si	Mn <sup>b</sup>	P	S	V	Nb	Ti	Otro	CEIiw	CEPcm
BM (L245M)	0.22	0.45	1.20	0.025	0.015	0.05	0.05	0.04	e, l	0.43	0.25
X42M (290M)	0.22	0.45	1.30	0.025	0.015	0.05	0.05	0.04	e, l	0.43	0.25
X46M (L320M)	0.22	0.45	1.30	0.025	0.015	0.05	0.05	0.04	e, l	0.43	0.25
X52 (L360M)	0.22	0.45	1.40	0.025	0.015	d	d	d	e, l	0.43	0.25

<sup>a</sup> Based on product analysis for seamless pipe with t > 20.0 mm (0.787 in), the carbon equivalent limits will be as agreed; CEIiw limits apply if C > 0.12% and CEPcm limits apply if C ≤ 0.12%.

<sup>b</sup> For each reduction of 0.01% of the specified maximum C, an increase of 0.05% above the specified maximum manganese is allowed up to a maximum of 1.65% for grades ≥ L245 or B, but ≤ L360 or X52.

<sup>d</sup> Nb + V + Ti ≤ 0.15%

<sup>e</sup> If no other range is agreed, Cu ≤ 0.50%; Ni ≤ 0.30%; Cr ≤ 0.30% and Mo ≤ 0.15%

<sup>l</sup> For PSL 2 pipe grades, except those grades noted in the footnote

Chemical composition for API 5L PSL-2 for sour service with thickness ≤ 25 mm (0.984 in)

STEEL GRADE	% MAX MASS FRACTION FOR CAST AND PRODUCT ANALYSIS									% MAX CARBON EQUIVALENT <sup>A</sup>	
	C <sup>b</sup>	Si	Mn <sup>b</sup>	P	S	V	Nb	Ti	Otro	CEIiw	CEPcm
L245MS o BMS	0.10	0.40	1.25	0.02 <sup>e</sup>	0.015	0.04	0.04	0.04	---	---	0.19
L290MS o X42MS	0.10	0.40	1.25	0.02 <sup>e</sup>	0.015	0.04	0.04	0.04	---	---	0.19
L320MS o X46MS	0.10	0.45	1.35	0.02 <sup>e</sup>	0.015	0.05	0.05	0.04	---	---	0.20
L360MS o X52MS	0.10	0.45	1.45	0.02 <sup>e</sup>	0.015	0.05	0.06	0.04	---	---	0.20

<sup>a</sup> If C > 0.12% CEIiw is used; if C ≤ 0.12% CEPcm is used

<sup>b</sup> For each reduction of 0.01% of the specified maximum C, an increase of 0.05% above the specified maximum manganese is allowed up to a maximum increase of 0.20%.

<sup>e</sup> If it is agreed for welded pipe an increase in sulfur ≤ 0.006% is allowed; if the above occurs a Ca / S relationship must also be agreed.

*Pressure test for different specifications API 5L PSL-2, PSL-2-for sour service*

DESIGNATION		SCHE- DULE	THICKNESS		B		X42N, X42NS		X46N, X46NS		X52N, X52NS	
					L245		L290N, L290NS		L320N, L320NS		L360N, L360NS	
mm	in		mm	in	Kg/cm <sup>2</sup>	Lb/in <sup>2</sup>	Kg/cm <sup>2</sup>	Lb/in <sup>2</sup>	Kg/cm <sup>2</sup>	Lb/in <sup>2</sup>	Kg/cm <sup>2</sup>	Lb/in <sup>2</sup>
50	2	STD	3.9	0.154	194	2756	209	2970	209	2970	209	2970
			4.8	0.188	209	2970	209	2970	209	2970	209	2970
		XS	5.5	0.218	209	2970	209	2970	209	2970	209	2970
65	2 1/2		4.0	0.156	164	2335	193	2738	209	2970	209	2970
			4.8	0.188	197	2799	209	2970	209	2970	209	2970
		STD	5.2	0.203	209	2970	209	2970	209	2970	209	2970
			5.5	0.216	209	2970	209	2970	209	2970	209	2970
80	3		4.0	0.156	135	1915	158	2250	175	2483	196	2792
			4.8	0.188	162	2306	191	2711	209	2970	209	2970
		STD	5.5	0.216	186	2640	209	2970	209	2970	209	2970
100	4		4.8	0.188	125	1784	148	2109	164	2326	184	2618
			5.6	0.219	147	2089	173	2457	191	2711	209	2970
		STD	6.0	0.237	157	2234	187	2659	206	2932	209	2970



PROCESSES CERTIFIED  
UNDER ISO 9001: 2015 STANDARD  
ISO 2754 - Plant TUNA



PROCESSES CERTIFIED  
UNDER THE Q1 API NORM ed. 9  
Q1-2621- Plant TUNA



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