

HELICOIDAL WELD PIPE



VILLACERO

TODO EN ACERO

HELICOIDAL WELD PIPE

In larger diameters, mainly intended for the conduction of fluids (water, gas, air and hydrocarbons) in large-scale projects and for use in industry and structural projects. With a helical forming and welding process and with specialized human capital, and the support of the latest generation technology, makes strict compliance with the main standards of national and international organizations. Product certificate with American Petroleum Institute (API 5L) and “Certificación Mexicana” (NOM-001-CONAGUA-2011). Affiliate to AWWA (American Water Works Association).

CHARACTERISTICS

- Diameters from 500 mm to 3048 mm (20 "to 120").
- Lengths up to 25 m (82 ft).
- Different finishes such as: bare, coated exterior and/or interior such as: FBE, FBE-ARO, polyurethanes, three-layer polyethylene, and epoxies.
- With smooth, beveled ends or Bell-Spigot.
- Up to API 5L PSL1 X70, PSL2 X70 Annex H and API 5L PSL2 X80.
- Certificate CONAGUA for pressure water distribution in diameters from 20" a 42" and up to X70.

USES AND APPLICATIONS

- Structural: piles, grain storage (silos), transport tanks (pipes), panoramic, ornamental advertising stands, etc.
- Water: drinking water supply, drainage, water purification and water treatment plants, wastewater discharge, irrigation systems, etc.
- Conduction: air systems, gas extraction, conduction of oil, dragging lines, pumping systems, etc.
- Oil, gas and another hydrocarbons.

TECHNICAL INFORMATION

Production specifications

	Minimum	Maximum	Minimum	Maximum
	mm	mm	in	in
DIAMETERS	508	3048	20	120
WALL THICKNESS	4	25.4	0.158	1.00
MAXIMUM LENGTH	25 mts		82 ft	
SPECIAL LENGTH	Consult plant			
RAW MATERIAL	Hot rolled Steel			
	Máx. X70 PSL 1			
	Máx. X80 PSL 2			
	Max. X70 PSL 2 Annex H			
WELDING PROCESS	DSAW (Doble Submerged Arc Weld) Internal and external welding			

Quality standards

PRODUCTION	STRUCTURAL:	ASTM A-283
		ASTM A-252
		ASTM A-1011 (SS)
		ASTM A-1018 (SS)
		ASTM A-572
	PETROLEUM AND GAS:	API 5L
		ISO 3183
		NRF-001-PEMEX
	WATER:	ANSI / AWWA C200
		NMX-001-CONAGUA

Testing for quality control

RAW MATERIAL AND MANUFACTURING PROCESS:	Chemical analysis of the material
	Tension tests
	Guided bend test
	Impact test (Charpy)
	DWTT (Drop Weight Tear Test)
	Hardness tests
	Metallographic analysis
NON-DESTRUCTIVE TESTS:	Macrography
	Visual and dimensional
	Hydrostatic test
	Ultrasound test online
	X-ray test
	Ultrasound test
	Magnetic particle test
COATING TESTS	Penetrating liquid test
	Holiday online and portable
	Coating layer measurement
	Visual inspection
	Other

Internal and external coating

INTERNAL EXTERNAL	EPOXY:	ANSI / AWWA C-210
	CEMENT:	ANSI / AWWA C-205
EXTERNAL COATING:	POLYETHYLENE:	ANSI / AWWA C-213 / AWWA C-214 / C-215 / DIN30670
	POLYPROPYLENE:	ANSI / AWWA C-213 / C-214 / C-215 / DIN30678
	POLYPROPYLENE:	ANSI / AWWA C-222
	FUSION BOND EPOXY	CSA.Z245.20
		ISO 21809-2
		NACE-RP 0394
		ANSI- AWWA 213
FBE-ARO EPOXY	CAN-CSA-Z245.20	
	ANSI / AWWA C-210	
	NRF-026-PEMEX	

Diameters between 100" and 120" are only manufactured in structural quality. Request a Commercial Division for different dimensions to this table.

Standards for conduction, mechanical and / or structural pipe, chemical and physical characteristics:

AWWA C200 standard

STEEL GRADE		YIELD STRENGTH (MIN)		TENSILE STRENGTH MIN		CHEMICAL ANALYSIS % MAX.			
		Mpa	KSI (Lb/in ²)	Mpa	KSI (Lb/in ²)	Carbon	Manganese	Phosphorus	Sulfur
A-36	A	248	36	400	58	0.25	1	0.035	0.035
A-283	C,D	207-228	30-33	380-415	55-60	0.24-0.27	0.9	0.035	0.04
A-572	42,50	290-345	42-50	415-450	60-65	0.26	1.3	0.03	0.03
A-1011 (SS)	30-55	205-380	30-55	340-480	49-70	0.25	0.90-1.35	0.035	0.04
A-1018(SS)	30-40	205-276	30-40	340-380	49-55	0.25	1.5	0.035	0.04
ASTM A-139	ABCDE	205-360	30-52	330-455	48-66	0.25-0.30	1.0-1.4	0.035	0.035
ASTM A-252	1,2,3	205-310	30-45	345-455	50-66	0.26	1	0.05	0.035

Norm API-5L-PSL-1, License 5L-0831

STEEL GRADE		YIELD STRENGTH (MIN)		TENSILE STRENGTH MIN		CHEMICAL ANALYSIS % MAX.			
		Mpa	KSI (Lb/in ²)	Mpa	KSI (Lb/in ²)	Carbon	Manganese	Phosphorus	Sulfur
A	L210	210	30.5	335	48.6	0.22	0.9	0.03	0.03
B	L245	245	35.5	415	60.2	0.26	1.2	0.03	0.03
X42	L290	290	42.1	415	60.2	0.26	1.3	0.03	0.03
X46	L320	320	46.4	435	63.1	0.26	1.4	0.03	0.03
X52	L360	360	52.2	460	66.7	0.26	1.4	0.03	0.03
X56	L390	390	56.6	490	71.1	0.26	1.4	0.03	0.03
X65	L450	450	65.3	535	77.6	0.26	1.45	0.03	0.03
X70	L485	485	70.3	570	82.7	0.26	1.65	0.03	0.03

Note 1. In welding, the tensile strength for tubes under SAW and COW should be minimal

Note 2. For all steel grades, except grade A: Nb+V≤0.06; Nb+V+Ti≤0.15%; Cu,≤0.50%, Ni≤0.50%, Cr≤0.50%, Mo≤0.15% B (Residual)≤0.001%

Norm API-5L PSL-2, license 5L-0831

STEEL GRADE		YIELD STRENGTH (MIN)		TENSILE STRENGTH MIN		CHEMICAL ANALYSIS % MAX.									
		Mpa	KSI (Lb/in ²)	Mpa	KSI (Lb/in ²)	Carbon	Manganese	Phosphorus	Sulfur	Silicon	Vanadium	Niobium	Titanium	Carbon	Carbon
		Mín-Máx.	Mín-Máx.	Mín-Máx.	Mín-Máx.									Eq. CEIIW	Eq. CEpcm
BM	L245M	245-450	35.5-65.3	415-655	60.2-95.0	0.22	1.2	0.025	0.015	0.45	.05	.05	.04	0.43	0.25
X42M	L290M	290-495	42.1-71.8	415-655	60.2-95.0	0.22	1.3	0.025	0.015	0.45	.05	.05	.04	0.43	0.25
X46M	L320M	320-525	46.4-76.1	435-655	63.1-95.0	0.22	1.3	0.025	0.015	0.45	.05	.05	.04	0.43	0.25
X52M	L360M	360-530	52.2-76.9	460-760	66.7-110.2	0.22	1.4	0.025	0.015	0.45	Nota 3	Nota 3	Nota 3	0.43	0.25
X56M	L390M	390-545	56.6-79.0	490-760	71.1-110.2	0.22	1.4	0.025	0.015	0.45	Nota 3	Nota 3	Nota 3	0.43	0.25
X65M	L450M	450-600	65.3-87.0	535-760	77.6-110.2	0.12	1.6	0.025	0.015	0.45	Nota 3	Nota 3	Nota 3	0.43	0.25
X70M	L485M	485-635	70.3-92.1	570-760	82.7-110.2	0.12	1.7	0.025	0.015	0.45	Nota 3	Nota 3	Nota 3	0.43	0.25
X80M	L555M	555-705	80.5-102.3	625-825	90.6-119.7	0.12	1.85	0.025	0.015	0.45	Nota 3	Nota 3	Nota 3	0.43	0.25

Note 1. In welding, the tensile strength for pipes under SAW and COW should be minimal.
 Note 2. For the steel grade: B; X42 and X46 the V and Nb = 0.05% max. and Ti = 0.04% Max.
 Note 3. For all grades: Nb + V + Ti ≤ 0.15%; Cu, ≤0.50%, Ni ≤0.30%, Cr ≤0.30%, Mo ≤0.15%, Residual B ≤0.001%

Norm API-5L PSL-2, Annex H license 5L-0831

STEEL GRADE		YIELD STRENGTH (MIN)		TENSILE STRENGTH MIN		CHEMICAL ANALYSIS % MAX.									
		Mpa	KSI (Lb/in ²)	Mpa	KSI (Lb/in ²)	Carbon	Manganese	Phosphorus	Sulfur	Silicon	Vanadium	Niobium	Titanium	Carbon	
		Mín-Máx.	Mín-Máx.	Mín-Máx.	Mín-Máx.									Eq. CEpcm	
BMS	L245MS	245-450	35.5-65.3	415-655	60.2-95.0	0.1	1.25	0.02	0.002	0.04	0.04	0.04	0.04	0.19	
X42MS	L290MS	290-495	42.1-71.8	415-655	60.2-95.0	0.1	1.25	0.02	0.002	0.04	0.04	0.04	0.04	0.19	
X46MS	L320MS	320-525	46.4-76.1	435-655	63.1-95.0	0.1	1.35	0.02	0.002	0.45	0.05	0.05	0.04	0.2	
X52MS	L360MS	360-530	52.2-76.9	460-760	66.7-110.2	0.1	1.45	0.02	0.002	0.45	0.05	0.06	0.04	0.2	
X56MS	L390MS	390-545	56.6-79.0	490-760	71.1-110.2	0.1	1.45	0.02	0.002	0.45	0.06	0.08	0.04	0.21	
X60MS	L415MS	415-565	60.2 - 81.9	520-760	75.4-110.2	0.1	1.45	0.02	0.002	0.45	0.08	0.08	0.06	0.21	
X65MS	L450MS	450-600	65.3-87	535-760	77.6-110.2	0.1	1.6	0.02	0.002	0.45	0.10	0.08	0.06	0.22	
X70MS	L485MS	485-635	70.3-92.10	570-760	82.7-110.2	0.1	1.6	0.02	0.002	0.45	0.10	0.08	0.06	0.22	

Note 1. In welding, the tensile strength for pipes under SAW and COW should be minimal.
 Note 2. For the steel grade: B; X42 and X46 the V and Nb = 0.05% max. and Ti = 0.04% Max.
 Note 3. For all grades: Nb + V + Ti ≤ 0.15%; Cu, ≤0.50%, Ni ≤0.30%, Cr ≤0.30%, Mo ≤0.15%, Residual B ≤0.001%

Table of production ranges

THICKNESS		mm	4	5.6	6.4	7.9	9.5	11.1	11.9	12.7	14.3	15.9	17.5	19.1	20.6	25.4
		In	0.157	0.219	0.250	0.312	0.375	0.438	0.469	0.500	0.562	0.625	0.690	0.750	0.812	1.000
EXTERNAL DIAMETER		WEIGHT (kg / m)														
in	mm															
20	508	49.5	69.4	79.2	98.6	116.8	136.0	145.6	155.1	174.1	192.9					
22	559	54.5	76.4	87.2	108.7	128.7	150.0	160.5	171.1	192.1	212.9	233.7				
24	610	59.5	83.5	95.3	118.8	140.7	163.9	175.5	187.1	210.1	232.9	255.7				
26	660		90.4	103.2	128.6	152.4	177.6	190.2	202.7	227.7	252.5	277.3				
28	711		97.4	111.2	138.7	164.3	191.6	205.2	218.7	245.7	272.5	299.3				
30	762		104.5	119.3	148.7	176.3	205.5	220.1	234.7	263.7	292.5	321.3	349.9			
32	813		111.5	127.3	158.8	188.2	219.5	235.1	250.6	281.7	312.5	343.3	373.9	402.5		
34	864		118.5	135.3	168.9	200.2	233.5	250.1	266.6	299.6	332.5	365.3	398.9	428.4		
36	914		125.4	143.2	178.7	211.9	247.1	264.7	282.3	317.6	352.1	386.9	421.5	453.8	556.6	
38	965		132.5	151.3	188.8	223.8	261.1	279.7	298.2	335.3	372.1	408.9	445.5	479.8	588.5	
40	1016		139.5	159.3	198.9	235.8	275.1	294.7	314.2	353.2	392.1	430.9	469.5	505.7	620.5	
42	1067		146.6	167.4	208.9	247.7	289.0	309.6	330.2	371.2	412.1	452.9	493.6	531.6	652.4	
44	1118			175.4	219.0	259.7	303.0	324.6	346.2	389.2	432.1	474.9	517.6	557.5	684.4	
46	1168			183.3	228.8	271.4	316.7	339.3	361.8	406.8	451.7	496.5	541.1	582.9	715.7	
48	1219			191.4	238.9	283.3	330.6	354.2	377.8	424.8	471.7	518.5	565.2	608.8	747.6	
52	1321			205.8	259.0	307.2	358.6	384.2	409.7	460.8	511.7	562.5	613.2	660.6	811.5	
54	1372				269.1	319.2	372.5	399.1	425.7	478.8	531.7	584.5	637.2	686.5	843.5	
56	1422				279.0	330.9	386.2	413.8	441.4	496.4	551.3	606.1	660.8	711.9	874.8	
60	1524				299.1	354.8	414.1	443.7	473.3	532.4	591.3	650.1	708.8	763.7	938.7	
64	1626					378.7	442.0	473.7	505.3	568.3	631.3	694.1	756.9	815.5	1002.6	
66	1676					390.4	455.7	488.3	520.9	586.0	650.9	715.7	780.4	840.9	1034.0	
68	1727					402.4	469.7	503.3	536.9	604.0	670.9	737.7	804.4	866.8	1066.0	
72	1829					426.3	497.6	533.2	568.8	639.9	710.9	781.8	825.5	918.7	1130.0	
76	1930					449.9	525.3	562.9	600.5	675.5	750.5	825.3	900.0	970.0	1193.0	
80	2032					473.8	553.2	592.8	632.4	711.5	790.5	869.4	948.1	1021.8	1256.9	
84	2134					497.7	581.1	622.7	664.4	747.5	830.5	913.4	996.1	1073.6	1320.8	
88	2235					521.4	608.7	652.4	696.0	783.1	870.1	957.0	1043.7	1124.9	1384.0	
90	2286					533.3	622.7	667.3	712.0	801.1	890.1	979.0	1067.7	1150.8	1416.0	
92	2337							682.3	727.9	819.1	910.1	1001.0	1091.7	1176.7	1447.9	
96	2438								759.6	854.7	949.7	1044.6	1039.3	1228.0	1511.2	
100	2540									890.7	989.7	1088.6	1187.4	1279.8	1575.1	
104	2642									926.6	1029.7	1132.6	1235.4	1331.7	1638.9	
108	2743									962.2	1069.3	1176.2	1283.0	1383.0	1702.2	
112	2845										1109.3	1220.2	1331.0	1434.8	1766.1	
116	2946										1148.9	1263.8	1378.3	1486.1	1829.4	
120	3048										1188.9	1307.8	1426.6	1537.9	1893.2	

Diameters between 100 "and 120" are only manufactured in structural quality.
Ask the Commercial Division for dimensions other than this table.



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



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



CONAGUA CERTIFICATE
CERTIMEX CMX-CP-2540-2017



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