

Sumerged-Arc Welded Pipes to ASTM Specifications

Standard Specification	Chemical Requirement (%)										
	C max	Mn max	P max	S max	Si max	Cr	Ni	Mo	Yield Strength, Mpa	Tensile Strength, Mpa	Elongation (Min%)
A 358 TP304	0.08	2.00	0.045	0.03	0.75	18.00-20.00	8.00-10.50	-	205	515	40
A 358 TP304L	0.03	2.00	0.045	0.03	0.75	18.00-20.00	8.00-12.00	-	170	485	40
A 358 TP304H	0.04-0.10	2.00	0.045	0.03	0.75	18.00-20.00	8.00-10.50	-	205	515	40
A 358 TP316	0.08	2.00	0.045	0.03	0.75	16.00-18.00	10.00-14.00	2.00-3.00	205	515	40
A 358 TP316L	0.03	2.00	0.045	0.03	0.75	16.00-18.00	10.00-14.00	2.00-3.00	170	485	40
A 358 TP316H	0.04-0.10	2.00	0.045	0.03	0.75	16.00-18.00	10.00-14.00	2.00-3.00	205	515	40
A 358 TP321	0.08	2.00	0.045	0.03	0.75	17.00-19.00	9.00-12.00	-	205	515	40
A 358 TP321H	0.04-0.10	2.00	0.045	0.03	0.75	17.00-19.00	9.00-12.00	-	205	515	40
A 671 CB60	0.24-0.31*	0.98	0.035	0.035	0.13-0.45	-	-	-	220	415-550	25
A 671 CB65	0.28-0.33*	0.98	0.035	0.035	0.13-0.45	-	-	-	240	450-585	23
A 671 CB70	0.31-0.35*	1.30	0.035	0.035	0.13-0.45	-	-	-	260	485-620	21
A 671 CC60	0.21-0.27*	0.79-1.30	0.035	0.035	0.13-0.45	-	-	-	220	415-550	25
A 671 CC65	0.24-0.29*	0.79-1.30	0.035	0.035	0.13-0.45	-	-	-	240	450-585	23
A 671 CC70	0.27-0.31*	0.79-1.30	0.035	0.035	0.13-0.45	-	-	-	260	485-620	21
A 672 B60	0.24-0.31*	0.98	0.035	0.035	0.13-0.45	-	-	-	220	415-550	25
A 672 B65	0.28-0.33*	0.98	0.035	0.035	0.13-0.45	-	-	-	240	450-585	23
A 672 B70	0.31-0.35*	1.30	0.035	0.035	0.13-0.45	-	-	-	260	485-620	21
A 672 C60	0.21-0.27*	0.79-1.30	0.035	0.035	0.13-0.45	-	-	-	220	415-550	25
A 672 C65	0.24-0.29*	0.79-1.30	0.035	0.035	0.13-0.45	-	-	-	240	450-585	23
A 672 C70	0.27-0.31*	0.79-1.30	0.035	0.035	0.13-0.45	-	-	-	260	485-620	21
A 691 1.1/4 CR	0.04-0.17	0.35-0.73	0.035	0.035	0.44-0.86	0.94-1.56	-	0.40-0.70	310	515-690	22
A 691 2.1/4 CR	0.04-0.15	0.25-0.66	0.035	0.035	0.50	1.88-2.62	-	0.85-1.15	310	515-690	18
A 691 5 CR	0.15	0.25-0.66	0.035	0.03	0.55	3.90-6.10	-	0.40-0.70	310	515-690	18
A 691 9 CR	0.15	0.25-0.66	0.03	0.03	1.05	7.90-10.10	-	0.85-1.15	310	515-690	18
A 691 91	0.06-0.15	0.25-0.66	0.025	0.012	0.18-0.56	7.90-9.60	0.43	0.80-1.10	415	585-760	18

* Depending on plate thickness

Quality Control

At all stages of our business and manufacturing fully comply with international quality standards, such as:

Specification	Title
API 5L 2B	Line pipe Specification for the Fabrication of Structural Steel Pipe
ASTM A53 A134 A139 A252 A671 A672	Welded and Seamless Steel Pipe Electric-Fusion (Arc) - Welded Steel Plate Pipe Electric-Fusion (Arc) - Welded Steel Pipe Welded and Seamless Steel Pipe Piles Electric-Fusion-Welded Steel Pipe for Atmospheric and Lower Temperature Electric-Fusion-Welded Steel Pipe for High Pressure Service at Moderate Temperature
B5 3601 3602 3604	Steel Pipes and Tubes for Pressure Purpose Carbon Steel : Ordinary Duties Steel Pipes and Tubes for Pressure Purpose Carbon Steel High Duties Steel Pipes and Tubes for Pressure Purpose Low and Medium - alloy Steel
DIN 1626 1628 17172	Welded Circular Unalloyed Steel Tubes Subject to special requirement High performance Welded Circular Unalloyed Steel Tube Steel Pipes for Pipe lines for the Transport of Combustible Fluids and Gases Technical Conditions of Delivery
DIN G3444	Carbon Steel Tubes for General Structural Purposes
G3457	Electric-Arc-Welded Carbon Steel Pipe
CSA Z245.1	General Requirements for Plain-End Welded and Seamless Steel Line Pipe
AWWA C200	Steel Water Pipe 6 Inches and Larger

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Sumerged-Arc Welded Pipes to API Specifications

Standard Specification	Application	Chemical Requirement (%) PSL1/PSL2					Physical Requirement			
		C MAX	Mn MAX	P MAX	S MAX	Ti MAX	Tensile Strength	Yield Strength	Elongation (Min %)	Gauge Length (in)
API 5L	A	0.22/ -	0.90/ -	0.03/0.025	0.03/0.015	-	Min. 48,000psi (33.7 kg/mm ²)	Min. 30,000psi (21.1 kg/mm ²)	$e = 625,000 \times \frac{A_{0.2}}{U_{0.9}}$	2
	B	0.26/0.22	1.20	0.03/0.025	0.03/0.015	0.04	Min. 60,000psi (42.2 kg/mm ²)	Min. 35,000psi (24.6 kg/mm ²)	$e = 625,000 \times \frac{A_{0.2}}{U_{0.9}}$	2
	X 42	0.26/0.22	1.30	0.03/0.025	0.03/0.015	0.04	Min. 60,000psi (42.2 kg/mm ²)	Min. 42,000psi (29.5 kg/mm ²)	$e = 625,000 \times \frac{A_{0.2}}{U_{0.9}}$	2
	X 46	0.26/0.22	1.40	0.03/0.025	0.03/0.015	0.04	Min. 63,000psi (44.3 kg/mm ²)	Min. 46,000psi (32.3 kg/mm ²)	$e = 625,000 \times \frac{A_{0.2}}{U_{0.9}}$	2
	X 52	0.26/0.22	1.40	0.03/0.025	0.03/0.015	0.04	Min. 66,000psi (46.5 kg/mm ²)	Min. 52,000psi (36.6 kg/mm ²)	$e = 625,000 \times \frac{A_{0.2}}{U_{0.9}}$	2
	X 56	0.26/0.22	1.40	0.03/0.025	0.03/0.015	0.04	Min. 71,000psi (50 kg/mm ²)	Min. 56,000psi (39.4 kg/mm ²)	$e = 625,000 \times \frac{A_{0.2}}{U_{0.9}}$	2
	X 60	0.26/0.22	1.40	0.03/0.025	0.03/0.015	0.04	Min. 75,000psi (52.7 kg/mm ²)	Min. 60,000psi (42.2 kg/mm ²)	$e = 625,000 \times \frac{A_{0.2}}{U_{0.9}}$	2
	X 65	0.26/0.22	1.45	0.03/0.025	0.03/0.015	0.06	Min. 77,000psi (54.2 kg/mm ²)	Min. 65,000psi (45.7 kg/mm ²)	$e = 625,000 \times \frac{A_{0.2}}{U_{0.9}}$	2
	X 70	0.26/0.22	1.65	0.03/0.025	0.03/0.015	0.06	Min. 82,000psi (57.7 kg/mm ²)	Min. 70,000psi (49.2 kg/mm ²)	$e = 625,000 \times \frac{A_{0.2}}{U_{0.9}}$	2
	X 80	- /0.22	- /1.85	0.03/0.025	0.03/0.015	0.06	Min. 90,000psi (63.3 kg/mm ²) Min. 120,000psi (84.5 kg/mm ²)	Min. 90,000psi (64.2 kg/mm ²) Min. 100,000psi (70.3 kg/mm ²)	$e = 625,000 \times \frac{A_{0.2}}{U_{0.9}}$	2
API 2B	Structural Steel Pipe	Pipe furnished to this specification shall be fabricated from steel plate specified by the purchaser.								

TENSILE TEST: Longitudinal, transverse and Weld Tensile Tests shall be carried out at the frequency of one test per inspection lot.

GUIDE BEND TEST: Guides Bend Tests of longitudinal seam weld shall be carried out for each lot of lengths or less, of each combination of special outside diameter, specified wall thickness and grade.

HYDROSTATIC TEST: Each length of pipe shall pass a Hydrostatic Test of at least the minimum test pressure and duration specified in API 5L.

FRACTURE TOUGHNESS TESTS Charpy tests shall be carried out at the frequency of one test per combination of pipe size and specifies wall thickness.

Commonly Used Materials				
Material Type	Material Used			
	Fitting	Pipe	Plate	Forged
Carbon Steel	A-234 WPB/C	ASTM A-106 Gr. B/C	ASTM A-515 Gr. 65/70/75	ASTM A-105
Carbon Steel (for low temperature)	A-420 WPL6 (-50°C)	ASTM A-333 Gr.6	ASTM A-516 Gr. 60/65/70	ASTM A-350 LF2
	A-420 WPL9 (-100°C)	ASTM A-333 Gr.9	ASTM A-203 Gr. C	ASTM A-350 LF9
	A-420 WPL3 (-150°C)	ASTM A-333 Gr.3	ASTM A-203 Gr. D	ASTM A-350 LF3
Chromium-Molybdenum Alloy Steel	A-234 WP1	ASTM A-335 P1	ASTM A-387 Gr. 2	ASTM A-182 F1
	A-234 WP12	ASTM A-335 P12	ASTM A-387 Gr. 12	ASTM A-182 F12
	A-234 WP1	ASTM A-335 P11	ASTM A-387 Gr. 11	ASTM A-182 F11
	A-234 WP22	ASTM A-335 P22	ASTM A-387 Gr. 22	ASTM A-182 F22
	A-234 WP5	ASTM A-335 P5	ASTM A-387 Gr. 5	ASTM A-182 F5
	A-234 WP9	ASTM A-335 P9	ASTM A-387 Gr. 9	ASTM A-182 F9
Stainless Steel	A-403 WP304	A312 TP304	A240 TP304	ASTM A-182 F304
	A-403 WP304L	A312 TP304L	A240 TP304L	ASTM A-182 F304L
	A-403 WP316	A312 TP316	A240 TP316	ASTM A-182 F316
	A-403 WP316L	A312 TP316L	A240 TP316L	ASTM A-182 F316L

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