SUNNYSTEEL
collect steel pipe and fitting resources

ALLOY STEEL PIPES & TUBES

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PRODUCT PORTFOLIO

Our alloy pipe encounters all industrial application which is trusted by different sector of,industries.

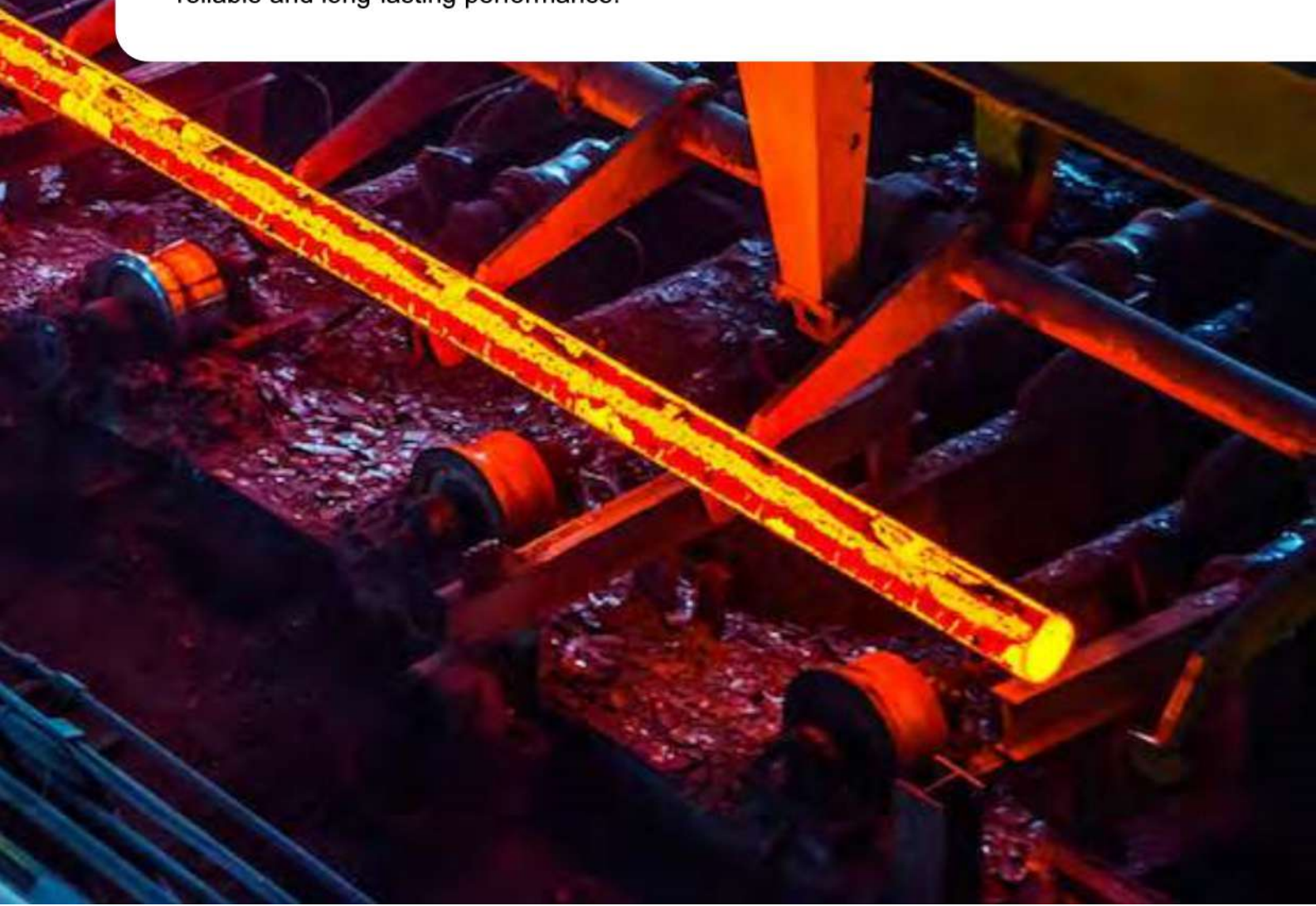
Our Excellence

Modern Manufacturing: We use the latest machinery and technology to produce alloy steel pipes with accuracy, stability, and efficiency.

Best Quality Material: Quality is the core of everything we do. To maintain it, we go through strict processes, utilizing the finest alloy materials that meet industrial standards and specifications for high performance and durability.

Competitive Price: As a leading alloy pipe manufacturer, we produce everything in-house. This allows us to offer much lower prices compared to traders.

Thorough Testing: Our team rigorously examines each product through extensive testing and inspection processes. This ensures the product meets industrial standards and delivers reliable and long-lasting performance.



What is alloy steel pipe?

Alloy steel pipe is made from alloy steel, a special type of steel produced by alloying carbon steel with various alloying elements. This improves its properties such as strength, corrosion resistance, heat resistance and other characteristics, making it suitable for a wide range of construction and industrial applications. These include the aerospace, automotive, construction, oil and gas and petrochemical industries.

Alloy Steel Pipe Product

Alloy steel pipes come in a wide range of sizes and specifications, meeting the diverse needs of various industries.

Alloy Steel Seamless Pipes

Alloy steel seamless pipes are made without welding hence it doesn't have any joints on its surface. It is suitable for moderate corrosion resistance and good durability applications, among all alloy steel pipe it is most popular.

Alloy Steel Welded Pipes

It is manufactured by welding alloy steel plates or coils together which is available in various forms such as electric resistance welded pipe, longitudinal submerged arc welding pipe, and helical submerged arc welding pipe.

Alloy Steel Round Pipe

It is most common type of alloy steel pipe suitable for wide ranges of application. And it is available in various size and thickness which helps to serve different requirement of buyer.

Alloy Steel Square & Rectangle Pipes

It is made from alloy steel which is often utilize in construction and industrial applications because of it enhances strength and resistance to corrosion.

Alloy Steel High Pressure Pipes

It is designed to resist high pressure in various industrial applications. Its alloying element increases its strength, corrosion resistance and durability which makes it suitable to be use in severe conditions.

Alloy Steel Heat Exchanger & Boiler Tubes

It is utilize in heat exchanger, boilers and superheaters in different grades to control the various pressure and temperature condition.

Alloy Steel Hydraulic Pipes

It is used for hydraulic systems and equipment which is known to offer high strength and wear resistance.

Alloy Steel Line Pipes

It is utilize for conveying oil, gas and other liquids over longer distance, different sizes and grades encounters the requirement of pipeline construction.

Alloy Steel Chrome-Moly Pipes

It offers outstanding corrosion and high temperature resistance. And it is use for power plants, chemical and petrochemical processing industries.

Alloy Steel Seamless Hydraulic Tubing

It offers accurate tolerances and smooth surface for transporting fluid. Hence it is utilize in hydraulic and pneumatic system.

Alloy Steel Low-Temperature Pipes

Alloy steel low temperature pipes are resistant to low temperature.

Properties and Advantages

Alloy steel pipes, manufactured by incorporating various alloying elements, offer enhanced features compared to standard carbon steel pipes.

Addition of Alloying Elements: The production of alloy steel pipes involves the addition of different alloying elements that boost the performance characteristics of the pipes.
Improved Performance: Alloy steel pipes possess superior attributes over standard carbon steel pipes due to the incorporation of these alloying elements.

HIGH STRENGTH

It is known for high strength and toughness which makes it useful for industrial applications.

CORROSION RESISTANCE

It's alloying element of chromium and nickel offer corrosion resistance properties which makes it suitable for corrosive condition such as in chemical processing and offshore drilling.

TEMPERATURE RESISTANCE

It maintains mechanical properties both at high and low temperature due to which it is use for applications which involves ultimate temperature variations.

WEAR RESISTANCE

Chromium and molybdenum increase its wear resistance and this makes it appropriate for applications which needs flexibility.

DURABILITY

As a result of its robust construction and resistance to various environmental factors, alloy pipe tends to have longer service life compare to carbon steel pipes, which helps to reduce the cost of maintenance and replacement.

VERSATILITY

It is available in broad range of grades and specifications therefore it can be utilize for various applications. Likewise aerospace industries, automotive industries, construction industries, petrochemical and power generation industries, etc.

GOOD WELDABILITY

Depending on the particular alloy and grade alloy steel pipes offer good weldability which reduces the fabrication and installation process.

HIGH PRESSURE AND TEMPERATURE RESISTANT

It is appropriate for applications which demands high pressure fluids and temperature environment like boiler, power plants, refineries, etc.

COST-EFFICIENCY

It has higher initial cost compare to carbon steel pipes due to its enhanced performance and lasting service life. It results in extra cost saving hence there will be low maintenance and replacement expenses.

BASIC CHEMICAL MECHANICAL AND PRODUCT ANALYSIS

	ASTM A213				
Chemical Composition (Max values %)	**T2 (UNS K11547)**	**T5 (UNS K41545)**	**T5b (UNS K51545)**	**T5c (UNS K41245)**	**T9 (UNS K90941)**
	C 0.10-0.20	**C** 0.15	**C** 0.15	**C** 0.12	**C** 0.15
	Mn 0.30-0.61	**Mn** 0.30-0.60	**Mn** 0.30-0.60	**Mn** 0.30-0.60	**Mn** 0.30-0.60
	P 0.025	**P** 0.025	**P** 0.025	**P** 0.025	**P** 0.025
	S 0.025	**S** 0.025	**S** 0.025	**S** 0.025	**S** 0.025
	Si 0.10-0.30	**Si** 0.50	**Si** 1.00-2.00	**Si** 0.50	**Si** 0.25-1.00
	Cr 0.50-0.81	**Cr** 4.00-6.00	**Cr** 4.00-6.00	**Cr** 4.00-6.00	**Cr** 8.00-10.00
	Mo 0.44-0.65	**Mo** 0.45-0.65	**Mo** 0.45-0.65	**Mo** 0.45-0.65	**Mo** 0.90-1.10
				Others	
				Ti 4 x C-0.70	
Tensile Strength, min, ksi [MPa]	60 [415]	60 [415]	60 [415]	60 [415]	60 [415]
Yield Strength, min, ksi [MPa]	30 [205]	30 [205]	30 [205]	30 [205]	30 [205]
Elongation in 2 in. or 50 mm, min, %	30	30	30	30	30
Product	Seamless Ferritic And Austenitic Alloy-steel Boiler, Superheater, And Heat-exchanger Tubes				

	ASTM A213				
Chemical Composition (Max values %)	**T11 (UNS K11597)**	**T12 (UNS K11562)**	**T17 (UNS K12047)**	**T21 (UNS K31545)**	**T22 (UNS K21590)**
	C 0.05-0.15	**C** 0.05-0.15	**C** 0.15-0.25	**C** 0.05-0.15	**C** 0.05-0.15
	Mn 0.30-0.60	**Mn** 0.30-0.61	**Mn** 0.30-0.61	**Mn** 0.30-0.60	**Mn** 0.30-0.60
	P 0.025	**P** 0.025	**P** 0.025	**P** 0.025	**P** 0.025
	S 0.025	**S** 0.025	**S** 0.025	**S** 0.025	**S** 0.025
	Si 0.50-1.00	**Si** 0.50	**Si** 0.15-0.35	**Si** 0.50-1.00	**Si** 0.50
	Cr 1.00-1.50	**Cr** 0.80-1.25	**Cr** 0.80-1.25	**Cr** 2.65-3.35	**Cr** 1.90-2.60
	Mo 0.44-0.65	**Mo** 0.44-0.65	**V** 0.15	**Mo** 0.80-1.06	**Mo** 0.87-1.13
Tensile Strength, min, ksi [MPa]	60 [415]	60 [415]	60 [415]	60 [415]	60 [415]
Yield Strength, min, ksi [MPa]	30 [205]	32 [220]	30 [205]	30 [205]	30 [205]
Elongation in 2 in. or 50 mm, min, %	30	30	30	30	30
Product	Seamless Ferritic And Austenitic Alloy-steel Boiler, Superheater, And Heat-exchanger Tubes				

ASTM A213

Chemical Composition (Max values %)	T23 (UNS K40712)	T24 (UNS K30736)	T36 Class 1 (UNS K21001)	T36 Class 2 (UNS K21001)
	C 0.04-0.10	**C** 0.05-0.10	**C** 0.10-0.17	**C** 0.10-0.17
	Mn 0.10-0.60	**Mn** 0.30-0.70	**Mn** 0.80-1.20	**Mn** 0.80-1.20
	P 0.030	**P** 0.020	**P** 0.030	**P** 0.030
	S 0.010	**S** 0.010	**S** 0.025	**S** 0.025
	Si 0.50	**Si** 0.15-0.45	**Si** 0.25-0.50	**Si** 0.25-0.50
	Ni 0.40	**Cr** 2.20-2.60	**Ni** 1.00-1.30	**Ni** 1.00-1.30
	Cr 1.90-2.60	**Mo** 0.90-1.10	**Cr** 0.30	**Cr** 0.30
	Mo 0.05-0.30	**V** 0.20-0.30	**Mo** 0.25-0.50	**Mo** 0.25-0.50
	V 0.20-0.30	**B** 0.0015-0.007	**V** 0.02	**V** 0.02
	B 0.0010-0.006	**N** 0.012	**Nb** 0.015-0.045	**Nb** 0.015-0.045
	Nb 0.02-0.08	**Al** 0.02	**N** 0.02	**N** 0.02
	N 0.015	**Others**	**Al** 0.050	**Al** 0.050
	Al 0.030	**Ti** 0.06-0.10	**Other**	**Other**
	W 1.45-1.75		**Cu** 0.50-0.80	**Cu** 0.50-0.80
	Others			
	Ti 0.005–0.060			
	Ti/N ≥ 3.5[c]			
Tensile Strength, min, ksi [MPa]	74 [510]	85 [585]	90 [620]	95.5 [660]
Yield Strength, min, ksi [MPa]	58 [400]	60 [415]	64 [440]	66.5 [460]
Elongation in 2 in. or 50 mm, min, %	20	20	15	15
Product	Seamless Ferritic And Austenitic Alloy-steel Boiler, Superheater, And Heat-exchanger Tubes			

ASTM A213

Chemical Composition (Max values %)	T91 Type 1 (UNS K90901)	T91 Type 2 (UNS K90901)	T92 (UNS K92460)	T93 (UNS K91350)
	C 0.07-0.14	**C** 0.07–0.13	**C** 0.07–0.13	**C** 0.05–0.10
	Mn 0.30-0.60	**Mo** 0.80–1.05	**Mn** 0.30–0.60	**Mn** 0.20–0.70
	P 0.020	**V** 0.16–0.27	**P** 0.020	**P** 0.020
	S 0.010	**Nb** 0.05–0.11	**S** 0.010	**S** 0.008
	Si 0.20-0.50	**Other**	**Si** 0.50	**Si** 0.05–0.50
	Ni 0.40	**Sb** 0.003	**Ni** 0.40	**Ni** 0.20
	Cr 8.0 - 9.5	**Sn** 0.010	**Cr** 8.5–9.5	**Cr** 8.50–9.50
	Mo 0.85–1.05	**As** 0.010	**Mo** 0.30–0.60	**V** 0.15–0.30
	V 0.18–0.25	**N/Al** 4.0 min	**V** 0.15–0.25	**B** 0.007–0.015
	Nb 0.06–0.10		**B** 0.001–0.006	**N** 0.005–0.015
	N 0.030–0.070		**Nb** 0.04–0.09	**Al** 0.030
	Al 0.02		**N** 0.030–0.070	**W** 2.5–3.5
	Other		**Al** 0.02	**Other**
	Ti 0.01		**W** 1.5–2.00	**Co** 2.5–3.5
	Zr 0.01		**Other**	**Nd** 0.010–0.060
			Ti 0.01	**O** 0.0050
			Zr 0.01	
Tensile Strength, min ksi [MPa]	85 [585]	85 [585]	90 [620]	90 [620]
Yield Strength, min, ksi [MPa]	60 [415]	60 [415]	64 [440]	64 [440]
Elongation in 2 in. or 50 mm, min, %	20	20	20	19
Product	Seamless Ferritic And Austenitic Alloy-steel Boiler, Superheater, And Heat-exchanger Tubes			

	ASTM A213									
Chemical Composition (Max values %)	**T115 (UNS K91060)**		**T122 (UNS K91271)**		**T128 (UNS K91421)**		**T911 (UNS K91061)**		**T921 (UNS K91201)**	
	C	0.07–0.14	**C**	0.07–0.14	**C**	0.12–0.17	**C**	0.09–0.13	**C**	0.08–0.12
	Mn	0.20–0.50	**Mn**	0.70	**Mn**	0.30–0.80	**Mn**	0.30–0.60	**Mn**	0.5–0.7
	P	0.020	**P**	0.020	**P**	0.02	**P**	0.020	**P**	0.03
	S	0.005	**S**	0.010	**S**	0.01	**S**	0.010	**S**	0.02
	Si	0.15–0.45	**Si**	0.50	**Si**	0.20–0.60	**Si**	0.10–0.50	**Si**	1.6–2.2
	Ni	0.25	**Ni**	0.50	**Ni**	0.10–0.40	**Ni**	0.40	**Ni**	0.8–1.4
	Cr	10.0–11.0	**Cr**	10.0–11.5	**Cr**	10.50–12.00	**Cr**	8.5–9.5	**Cr**	8.0–9.5
	Mo	0.37–0.63	**Mo**	0.25–0.60	**Mo**	0.20–0.60	**Mo**	0.90–1.10	**Mo**	0.8–1.1
	V	0.16–0.27	**V**	0.15–0.30	**V**	0.15–0.30	**V**	0.18–0.25	**N**	0.02–0.05
	B	0.001	**B**	0.0005–0.005	**B**	0.008–0.015	**B**	0.0003–0.006	**Al**	0.04
	Nb	0.02–0.07	**Nb**	0.04–0.10	**Nb**	0.02–0.06	**Nb**	0.06–0.10	**Other**	
	N	0.030–0.070	**N**	0.040–0.100	**N**	0.002–0.020	**N**	0.040–0.090	**Cu**	0.8–1.4
	Al	0.02	**Al**	0.02	**Al**	0.02	**Al**	0.02		
	Other		**W**	1.50–2.50	**W**	1.50–2.20	**W**	0.90–1.10		
	Ti	0.01	**Other**		**Other**		**Other**			
	Zr	0.01	**Cu**	0.30–1.70	**Co**	1.50–2.20	**Ti**	0.01		
	Cu	0.10	**Ti**	0.01	**Cu**	0.15	**Zr**	0.01		
	As	0.010	**Zr**	0.01						
	Sn	0.010								
	Sb	0.003								
	W	0.05								
Tensile Strength, min, ksi [MPa]	90 [620]		90 [620]		94 [650]		90 [620]		109 [750]	
Yield Strength, min, ksi [MPa]	65 [450]		58 [400]		71 [490]		58 [400]		84 [580]	
Elongation in 2 in. or 50 mm, min, %	20		20		20		20		20	
Product	Seamless Ferritic And Austenitic Alloy-steel Boiler, Superheater, And Heat-exchanger Tubes									

	ASTM A250			
Chemical Composition (Max values %)	**T1**	**T1a**	**T1b**	**T2**
	C 0.10–0.20	**C** 0.15–0.25	**C** 0.14 max	**C** 0.10–0.20
	Mn 0.30–0.80	**Mn** 0.30–0.80	**Mn** 0.30–0.80	**Mn** 0.30–0.61
	P 0.025	**P** 0.025	**P** 0.025	**P** 0.025
	S 0.025	**S** 0.025	**S** 0.025	**S** 0.020
	Si 0.10–0.50	**Si** 0.10–0.50	**Si** 0.10–0.50	**Si** 0.10–0.30
	Mo 0.44–0.65	**Mo** 0.44–0.65	**Mo** 0.44–0.65	**Mo** 0.44–0.65
				Cr 0.50–0.81
Tensile Strength, min, ksi [MPa]	55 [380]	60 [415]	53 [365]	60 [415]
Yield Strength, min, ksi [MPa]	30 [205]	32 [220]	28 [195]	30 [205]
Elongation in 2 in. or 50 mm, min, %	30	30	30	30
Product	Electric-resistance-welded Ferritic Alloy-steel Boiler And Superheater Tubes			

ASTM A250/A250M-95

Standard Specification for Electric-Resistance-Welded Ferritic Alloy-Steel Boiler and Superheater Tubes

	ASTM A250		
Chemical Composition (Max values %)	**T11**	**T12**	**T22**
	C 0.05–0.15	**C** 0.05–0.15	**C** 0.15 max
	Mn 0.30–0.60	**Mn** 0.30–0.61	**Mn** 0.30–0.60
	P 0.025	**P** 0.030	**P** 0.025
	S 0.020	**S** 0.020	**S** 0.020
	Si 0.50–1.00	**Si** 0.50 max	**Si** 0.50 max
	Mo 0.44–0.65	**Mo** 0.44–0.65	**Mo** 0.87–1.13
	Cr 1.00–1.50	**Cr** 0.80–1.25	**Cr** 1.90–2.60
Tensile Strength, min, ksi [MPa]	60 [415]	60 [415]	60 [415]
Yield Strength, min, ksi [MPa]	30 [205]	32 [220]	30 [205]
Elongation in 2 in. or 50 mm, min, %	30	30	30
Product	Electric-resistance-welded Ferritic Alloy-steel Boiler And Superheater Tubes		

	ASTM A334			
Chemical Composition (Max values %)	**Grade 1 [Note (1)]**	**Grade 3**	**Grade 6 [Note (1)]**	**Grade 7**
	C 0.30	**C** 0.19	**C** 0.30	**C** 0.19
	Mn 0.40–1.06	**Mn** 0.31–0.64	**Mn** 0.29–1.06	**Mn** 0.90 max
	P 0.025	**P** 0.025	**P** 0.025	**P** 0.025
	S 0.025	**S** 0.025	**S** 0.025	**S** 0.025
		Si 0.18–0.37	**Si** 0.10 min	**Si** 0.13–0.32
		Ni 3.18–3.82		**Ni** 2.03–2.57
Tensile Strength, min, ksi [MPa]	55 [380]	65 [450]	60 [415]	65 [450]
Yield Strength, min, ksi [MPa]	30 [205]	35 [240]	35 [240]	35 [240]
Elongation in 2 in. or 50 mm, min, %	28	22	22	22
Product	Seamless And Welded Carbon And Alloy-steel Tubes For Low-temperature Service			

	ASTM A334		
Chemical Composition (Max values %)	**Grade 8**	**Grade 9**	**Grade 11**
	C 0.13	**C** 0.20	**C** 0.10
	Mn 0.90 max	**Mn** 0.40–1.06	**Mn** 0.60 max
	P 0.025	**P** 0.025	**P** 0.025
	S 0.025	**S** 0.025	**S** 0.025
	Si 0.13–0.32	**Ni** 1.60–2.24	**Si** 0.35 max
	Ni 8.40–9.60	**Cu** 0.75–1.25	**Ni** 35.0–37.0
			Cr 0.50 max
			Co 0.50 max
			Mo 0.50 max
Tensile Strength, min, ksi [MPa]	100 [690]	63 [435]	65 [450]
Yield Strength, min, ksi [MPa]	75 [520]	46 [315]	35 [240]
Elongation in 2 in. or 50 mm, min, %	16	-	-
Product	Seamless And Welded Carbon And Alloy-steel Tubes For Low-temperature Service		

	ASTM A335									
Chemical Composition (Max values %)	**P1 (UNS K11522)**		**P2 (UNS K11547)**		**P5 (UNS K41545)**		**P5b (UNS K51545)**		**P5c (UNS K41245)**	
	C	0.10–0.20	**C**	0.10–0.20	**C**	0.15 max	**C**	0.15 max	**C**	0.12 max
	Mn	0.30–0.80	**Mn**	0.30–0.61	**Mn**	0.30–0.60	**Mn**	0.30–0.60	**Mn**	0.30–0.60
	P	0.025	**P**	0.025	**P**	0.025	**P**	0.025	**P**	0.025
	S	0.025	**S**	0.025	**S**	0.025	**S**	0.025	**S**	0.025
	Si	0.10–0.50	**Si**	0.10–0.30	**Si**	0.50 max	**Si**	1.00–2.00	**Si**	0.50 max
	Mo	0.44–0.65	**Cr**	0.10–0.30	**Cr**	4.00–6.00	**Cr**	4.00–6.00	**Cr**	4.00–6.00
			Mo	0.44–0.65	**Mo**	0.45–0.65	**Mo**	0.45–0.65	**Mo**	0.45–0.65
Tensile Strength, min, ksi [MPa]	55 [380]		55 [380]		60 [415]		60 [415]		60 [415]	
Yield Strength, min, ksi [MPa]	30 [205]		30 [205]		30 [205]		30 [205]		30 [205]	
Elongation in 2 in. or 50 mm, min, %										
Longitudinal	22		22		22		22		22	
Transverse	14		14		14		14		14	
Product	Seamless Ferritic Alloy-steel Pipe For High-temperature Service									

	ASTM A335									
Chemical Composition (Max values %)	**P9 (UNS K90941)**		**P11 (UNS K11597)**		**P12 (UNS K11562)**		**P15 (UNS K11578)**		**P21 (UNS K31545)**	
	C	0.15 max	**C**	0.05–0.15	**C**	0.05–0.15	**C**	0.05–0.15	**C**	0.05–0.15
	Mn	0.30–0.60	**Mn**	0.30–0.60	**Mn**	0.30–0.61	**Mn**	0.30–0.60	**Mn**	0.30–0.60
	P	0.025	**P**	0.025	**P**	0.025	**P**	0.025	**P**	0.025
	S	0.025	**S**	0.025	**S**	0.025	**S**	0.025	**S**	0.025
	Si	0.25–1.00	**Si**	0.50–1.00	**Si**	0.50 max	**Si**	1.15–1.65	**Si**	0.50 max
	Cr	8.00–10.00	**Cr**	1.00–1.50	**Cr**	0.80–1.25	**Mo**	0.44–0.65	**Cr**	2.65–3.35
	Mo	0.90–1.10	**Mo**	0.44–0.65	**Mo**	0.44–0.65			**Mo**	0.80–1.06
Tensile Strength, min, ksi [MPa]	60 [415]		60 [415]		60 [415]		60 [415]		60 [415]	
Yield Strength, min, ksi [MPa]	30 [205]		30 [205]		32 [220]		30 [205]		30 [205]	
Elongation in 2 in. or 50 mm, min, %										
Longitudinal	22		22		22		22		22	
Transverse	14		14		14		14		14	
Product	Seamless Ferritic Alloy-steel Pipe For High-temperature Service									

ASTM A335

Chemical Composition (Max values %)	P22 (UNS K21590)	P23 (UNS K41650)	P24 (UNS K30736)	P36 (UNS K21001)	P91 Type 1 (UNS K91560)
	C 0.05–0.15	C 0.04–0.10	C 0.05–0.10	C 0.10–0.17	C 0.08–0.12
	Mn 0.30–0.60	Mn 0.10–0.60	Mn 0.30–0.70	Mn 0.80–1.20	Mn 0.30–0.60
	P 0.025	P 0.030 max	P 0.020	P 0.030 max	P 0.020
	S 0.025	S 0.010 max	S 0.010	S 0.025 max	S 0.010
	Si 0.50 max	Si 0.50 max	Si 0.15–0.45	Si 0.25–0.50	Si 0.20–0.50
	Cr 1.90–2.60	Cr 1.90–2.60	Cr 2.20–2.60	Cr 0.30 max	Cr 8.00–9.50
	Mo 0.87–1.13	Mo 0.05–0.30	Mo 0.90–1.10	Mo 0.25–0.50	Mo 0.85–1.05
		Others	Others	Others	Others
		V 0.20–0.30	V 0.20–0.30	Ni 1.00-1.30	V 0.18–0.25
		Cb 0.02–0.08	Ti 0.06–0.10	Cu 0.50-0.80	N 0.030–0.070
		B 0.0010–0.006	N 0.012 max	Cb 0.015-0.045	Ni 0.40 max
		N 0.015 max	Al 0.02 max	V 0.02 max	Al 0.02 max
		Al 0.030 max	B 0.0015–0.007	N 0.02 max	Cb 0.06–0.10
		W 1.45–1.75		Al 0.050 max	Ti 0.01 max
		Ni 0.40 max			Zr 0.01 max
		Ti 0.005–0.060			
		Ti/N ≥ 3.5[c]			
Tensile Strength, min, ksi [MPa]	60 [415]	74 [510]	85 [585]	90 [620]	85 [585]
Yield Strength, min, ksi [MPa]	30 [205]	58 [400]	60 [415]	64 [440]	60 [415]
Elongation in 2 in. or 50 mm, min, %					
Longitudinal	22	20	20	-	20
Transverse	14	13	13	-	13
Product	Seamless Ferritic Alloy-steel Pipe For High-temperature Service				

ASTM A335

Chemical Composition (Max values %)	P91 Type 2 (UNS K91560)	P92 (UNS K92460)	P122 (UNS K92930)	P911 (UNSK91061)
	C 0.07–0.13	C 0.07–0.13	C 0.07–0.14	C 0.09–0.13
	Mo 0.80–1.05	Mn 0.30–0.60	Mn 0.70 max	Mn 0.30–0.60
	Others	P 0.020	P 0.020	P 0.020 max
	V 0.16–0.27	S 0.010	S 0.010	S 0.010 max
	Ni 0.20 max	Si 0.50 max	Si 0.50 max	Si 0.10–0.50
	Al 0.020 max	Cr 8.50–9.50	Cr 10.00–11.50	Cr 8.5–9.5
	N 0.035–0.070	Mo 0.30–0.60	Mo 0.25–0.60	Mo 0.90–1.10
	N/Al ratio ≥ 4.0	Others	Others	Others
	Cb 0.05–0.11	V 0.15–0.25	V 0.15–0.30	V 0.18–0.25
	Ti 0.01 max	N 0.03–0.07	W 1.50–2.50	Ni 0.40 max
	Zr 0.01 max	Ni 0.40 max	Cu 0.30–1.70	Cb 0.060–0.10
	Sn 0.010 max	Al 0.02 max	Cb 0.04–0.10	B 0.0003–0.006
	Sb 0.003 max	Cb 0.04–0.09	B 0.0005–0.005	N 0.04–0.09
	As 0.010 max	W 1.5–2.00	N 0.040–0.100	Al 0.02 max
	B 0.001 max	B 0.001–0.006	Ni 0.50 max	W 0.90–1.10
	W 0.05 max	Ti 0.01 max	Al 0.020 max	Ti 0.01 max
	Cu 0.10 max	Zr 0.01 max	Ti 0.01 max	Zr 0.01 max
			Zr 0.01 max	
Tensile Strength, min, ksi [MPa]	85 [585]	90 [620]	90 [620]	90 [620]
Yield Strength, min, ksi [MPa]	60 [415]	64[440]	58 [400]	64 [440]
Elongation in 2 in. or 50 mm, min, %				
Longitudinal	20	20	20	20
Transverse	13	13	13	13
Product	Seamless Ferritic Alloy-steel Pipe For High-temperature Service			

	ASTM A426			
Chemical Composition (Max values %)	**CP1 (UNS J12521)**	**CP2 (UNS J11547)**	**CP5 (UNS J42045)**	**CP5b (UNS J51545)**
	C 0.25 max	**C** 0.10–0.20	**C** 0.20 max	**C** 0.15 max
	Mn 0.30-0.80	**Mn** 0.30-0.61	**Mn** 0.30-0.70	**Mn** 0.30-0.60
	P 0.030	**P** 0.030	**P** 0.030	**P** 0.030
	S 0.025	**S** 0.025	**S** 0.025	**S** 0.025
	Si 0.10-0.50	**Si** 0.10-0.50	**Si** 0.75 max	**Si** 1.00-2.00
	Mo 0.44-0.65	**Cr** 0.50-0.81	**Cr** 4.00-6.50	**Cr** 4.00-6.00
		Mo 0.44-0.65	**Mo** 0.45-0.65	**Mo** 0.45-0.65
Tensile Strength, min, ksi [MPa]	65 000 [450]	60 000 [415]	90 000 [620]	60 000 [415]
Yield Strength, min, ksi [MPa]	35 000 [240]	30 000 [205]	60 000 [415]	30 000 [205]
Elongation in 2 in. or 50 mm, min, %	24	22	18	22
Product	Centrifugally Cast Ferritic Alloy Steel Pipe For High-temperature Service			

	ASTM A426			
Chemical Composition (Max values %)	**CP9 (UNS J82090)**	**CP11 (UNS J12072)**	**CP12 (UNS J11562)**	**CP15 (UNS J11522)**
	C 0.20 max	**C** 0.05–0.20	**C** 0.05–0.15	**C** 0.15 max
	Mn 0.30-0.65	**Mn** 0.30-0.80	**Mn** 0.30-0.61	**Mn** 0.30-0.60
	P 0.030	**P** 0.030	**P** 0.030	**P** 0.030
	S 0.025	**S** 0.025	**S** 0.025	**S** 0.025
	Si 0.25-1.00	**Si** 0.60 max	**Si** 0.50 max	**Si** 1.15-1.65
	Cr 8.00-10.00	**Cr** 1.00-1.50	**Cr** 0.80-1.25	**Mo** 0.44-0.65
	Mo 0.90-1.20	**Mo** 0.44-0.65	**Mo** 0.44-0.65	
Tensile Strength, min, ksi [MPa]	90 000 [620]	70 000 [485]	60 000 [415]	60 000 [415]
Yield Strength, min, ksi [MPa]	60 000 [415]	40 000 [275]	30 000 [205]	30 000 [205]
Elongation in 2 in. or 50 mm, min, %	18	20	22	22
Product	Centrifugally Cast Ferritic Alloy Steel Pipe For High-temperature Service			

	ASTM A426		
Chemical Composition (Max values %)	**CP21 (UNS J31545)**	**CP22 (UNS J21890)**	**CPCA15 (UNS J91150)**
	C 0.05–0.15	**C** 0.05–0.15	**C** 0.15 max
	Mn 0.30-0.60	**Mn** 0.30-0.70	**Mn** 1.00 max
	P 0.030	**P** 0.030	**P** 0.030
	S 0.025	**S** 0.025	**S** 0.025
	Si 0.50 max	**Si** 0.60 max	**Si** 1.50 max
	Cr 2.65-3.35	**Cr** 2.00-2.75	**Cr** 11.5-14.0
	Mo 0.80-1.06	**Mo** 0.90-1.20	**Mo** 0.50 max
Tensile Strength, min, ksi [MPa]	60 000 [415]	70 000 [485]	90 000 [620]
Yield Strength, min, ksi [MPa]	30 000 [205]	40 000 [275]	65 000 [450]
Elongation in 2 in. or 50 mm, min, %	22	20	18
Product	Centrifugally Cast Ferritic Alloy Steel Pipe For High-temperature Service		

ASTM A387 (Plate Specification) ASTM A691 (EFW pipe Specification)

	Grade 2	Grade 12	Grade 11	Grade 22	Grade 22L
Chemical Composition (Max values %)	**C** 0.04–0.21 **Mn** 0.50–0.88 **P** 0.035 **S** 0.035 **Si** 0.13–0.45 **Cr** 0.46–0.85 **Mo** 0.40–0.65	**C** 0.04–0.17 **Mn** 0.35–0.73 **P** 0.035 **S** 0.035 **Si** 0.13–0.45 **Cr** 0.74–1.21 **Mo** 0.40–0.65	**C** 0.04–0.17 **Mn** 0.35–0.73 **P** 0.035 **S** 0.035 **Si** 0.44–0.86 **Cr** 0.94–1.56 **Mo** 0.40–0.70	**C** 0.04–0.15 **Mn** 0.25–0.66 **P** 0.035 **S** 0.035 **Si** 0.50 max **Cr** 1.88–2.62 **Mo** 0.85–1.15	**C** 0.12 max **Mn** 0.25–0.66 **P** 0.035 **S** 0.035 **Si** 0.50 max **Cr** 1.88–2.62 **Mo** 0.85–1.15
Tensile Strength, min, ksi [MPa] Class 1	55 to 80 [380 to 550]	55 to 80 [380 to 550]	60 to 85 [415 to 585]	60 to 85 [415 to 585]	60 to 85 [415 to 585]
ksi [MPa] Class 2	70 to 90 [485 to 620]	65 to 85 [450 to 585]	75 to 100 [515 to 690]	75 to 100 [515 to 690]	-
Yield Strength, min, ksi [MPa] Class 1	33	33	35	30	30
ksi [MPa] Class 2	45 [310]	40 [275]	45 [310]	45 [310]	-
Elongation in 2 in. or 50 mm, min, %					
Class 1	22	22	22	18	18
Class 2	22	22	22	18	-
Product	For Carbon And Alloy Steel Pipe, Electric-fusion-welded For High-pressure Service At High Temperatures				

ASTM A387 (Plate Specification) ASTM A691 (EFW pipe Specification)

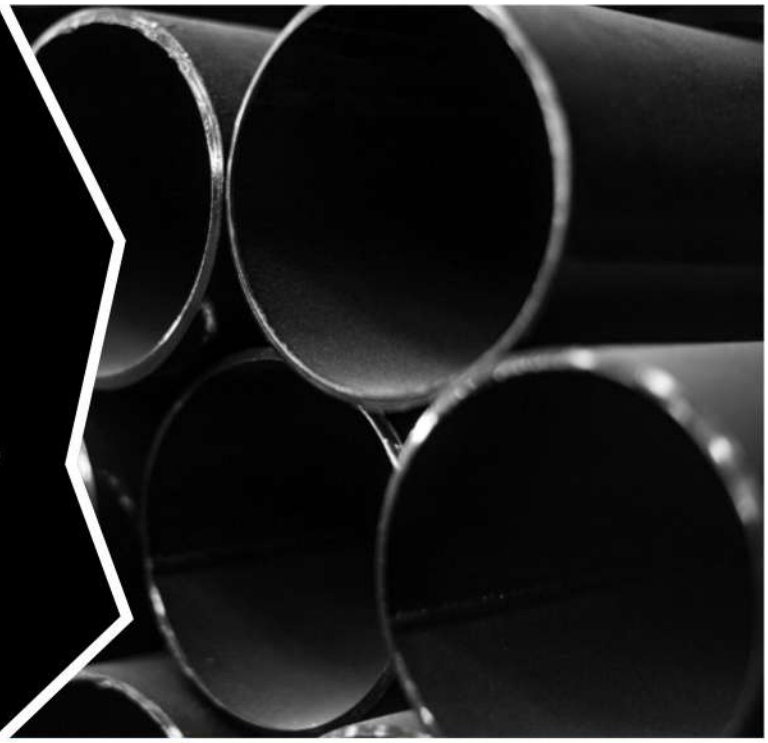
	Grade 21	Grade 21L	Grade 5	Grade 9
Chemical Composition (Max values %)	**C** 0.04–0.15 **Mn** 0.25–0.66 **P** 0.035 **S** 0.035 **Si** 0.50 max **Cr** 2.63–3.37 **Mo** 0.85–1.15	**C** 0.12 max **Mn** 0.25–0.66 **P** 0.035 **S** 0.035 **Si** 0.50 max **Cr** 2.63–3.37 **Mo** 0.85–1.15	**C** 0.15 max **Mn** 0.25–0.66 **P** 0.035 **S** 0.030 **Si** 0.55 max **Cr** 3.90–6.10 **Mo** 0.40–0.70	**C** 0.15 max **Mn** 0.25–0.66 **P** 0.030 **S** 0.030 **Si** 1.05 max **Cr** 7.90–10.10 **Mo** 0.85–1.15
Tensile Strength, min, ksi [MPa] Class 1	60 to 85 [415 to 585]	60 to 85 [415 to 585]	60 to 85 [415 to 585]	60 to 85 [415 to 585]
ksi [MPa] Class 2	75 to 100 [515 to 690]	-	75 to 100 [515 to 690]	75 to 100 [515 to 690]
Yield Strength, min, ksi [MPa] Class 1	30	30	30	35
ksi [MPa] Class 2	45 [310]	-	45 [310]	45 [310]
Elongation in 2 in. or 50 mm, min, %				
Class 1	18	18	18	18
Class 2	18	-	18	18
Product	For Carbon And Alloy Steel Pipe, Electric-fusion-welded For High-pressure Service At High Temperatures			

ASTM A387 (Plate Specification) ASTM A691 (EFW pipe Specification)

	Grade 91		Grade 911	
Chemical Composition (Max values %)	**C**	0.06–0.15	**C**	0.08–0.14
	Mn	0.25–0.66	**Mn**	0.25–0.66
	P	0.025	**P**	0.025
	S	0.012	**S**	0.012
	Si	0.18–0.56	**Si**	0.08–0.56
	Cr	7.90–9.60	**Cr**	8.40–10.70
	Mo	0.80–1.10	**Mo**	0.85–1.15
	Ni	0.43	**Ni**	0.43
	V	0.16–0.27	**V**	0.16–0.27
	Nb	0.05–0.11	**Nb**	0.05–0.11
	N_2	0.025–0.080	**B**	0.0002–0.007
	Al	0.05	**N_2**	0.035–0.095
			Al	0.05
			W	0.85–1.15
Tensile Strength, min, ksi [MPa] Class 1	-		-	
ksi [MPa] Class 2	85 to 110 [585 to 760]		90 to 120 [620 to 840]	
Yield Strength, min, ksi [MPa] Class 1	-		-	
ksi [MPa] Class 2	60 [415]		64 [440]	
Elongation in 2 in. or 50 mm, min, % Class 1	-		-	
Class 2	18		18	
Product	For Carbon And Alloy Steel Pipe, Electric-fusion-welded For High-pressure Service At High Temperatures			

Alloy Steel Pipes: Essential in Various Industries

It has high strength and corrosion resistance properties which is good for industrial applications, below given are its applications.



OIL AND GAS INDUSTRY

- DRILLING AND EXPLORATION : It has high strength and corrosion resistance properties which is good drilling and exploration of oil and natural gas wells, mainly in offshore and deep sea drilling functioning.
- TRANSPORTATION : It has durability and corrosion resistance properties, i.e. well for transporting crude oil, natural gas and other hydrocarbons over longer distances which are undergrounded.

PETROCHEMICAL INDUSTRY

- CHEMICAL PLANTS : It is critical in chemical refining plants where corrosive chemical are required.
- REFINERIES : It is utilize in refineries for transporting and processing of petrochemical products such as diesel, gasoline, and petrochemical raw material.

POWER GENERATION

- POWER GENERATION : It is utilize for conveying high-temperature steam and other used fluids in power generation, consisting both nuclear power plants and fossil fuel.
- GEOTHERMAL : In geothermal power plants, alloy pipes are utilize to handle hot steam and water.

AEROSPACE

Alloy steel pipe are utilize in aerospace and aircraft industries due to its durability, strength, and high temperature resistance.

AUTOMOTIVE:
It is utilize in automotive industry, as it is use in exhaust system due to its durability and resistance to heat.

CONSTRUCTION :
It is utilize for structural purpose such as in constructing bridges, buildings and stadium where high strength material is demanded.

MINING :
In mining work, alloy steel pipe are utilize for moving abrasive materials, slurries and corrosive solutions through pipelines.

SHIPBUILDING :
It is essential for shipbuilding applications such as marine exhaust systems and for fluids and gas piping.

AUTOMOTIVE RACING :
Alloy steel pipe is used in high performance automotive racing for exhaust system due to its ability to resist ultimate heat and pressure.

NUCLEAR INDUSTRY:
It is utilize for nuclear power plants for coolant transport and other severe applications where resistance to emission and high temperatures are crucial.

Quality of Assurance through Testing, Packaging, and Shipping

For us testing, packaging, and shipping are the crucial phase in the production and delivery of alloy steel pipes.

DETAILS OF TESTING WE PROVIDE

Non-Destructive Testing (NDT) :

Manage by NDT methods such as magnetic particle testing, radiographic testing, ultrasonic testing, dye penetrant testing, which test the welds durability and the structural strength of pipes.

Chemical Composition Analysis :

Chemical composition analysis are done by using spectroscopy or other methods to verify that the chemical composition to meet the particular requirements. And it even help to maintain the records of chemical analysis to identify.

Mechanical Testing :

Mechanical testing includes tensile testing, impact testing and hardness testing, to evaluate the mechanical properties, which ensures that it meet or break industry standards.

Dimensional Inspection :

It includes inspection of dimensions, wall thickness and surface of pipe. This ensures the alloy steel pipe specifications.

PACKAGING, MARKING AND SHIPPING FACILITIES

DETAILS OF PACKAGING WE PROVIDE

Protective Packaging :

We provide protective packaging such as plastic caps, end protectors and wrapping, this prevent that damage of pipe ends while transit and storage.

Bundle Packaging :

We do bundle pipe packaging which encourage smooth handling while transportation.

Custom Packaging :

We provide custom packaging to meet the particular requirement of customer.

DETAILS OF MARKING AND LABELLING WE PROVIDE

We clearly mark each bundle with important information such as product grade, specifications, size, and heat no. And attach shipping labels with destination details and handling instructions.

DETAILS OF SHIPPING FACILITIES WE PROVIDE

Logistics Planning :

We associate with logistics partners to plan well organized shipping routes and procedure, acknowledging factors like distance, mode of transport and schedule of delivery.

Documentation and Consent :

We ensure that all the required shipping documents such as tax invoices, packing list, permits of export and import, so as to follow international shipping obligatory.

Tracking and Traceability :

We provide a tracking details which allows the customer to track the progress of order in actual time. And for that we give shipping tracking number and approximate delivery time.

Customs Clearance :

We facilitate custom clearance by giving precise documentation and confirming that the shipments follow with customs regulations.