Stainless Steel Solid Welding Wire

AWS A5.9 ER420

Characteristics：

1.Higher hardness levels than Blue ax 410, due to highercarbon &Chromium content
2.Intended to weld stainless steels similar in chemical composition
3.Q2 Lote_Certificate showing actual wire composition andcalculated ferrite number (FN) available online

Application：

Industrial cutting: ER420 is used for industrial cutting tools, such as electric saw blades, etc. Its high hardness can easily cut metal materials and is wear-resistant and durable.
Mold repair: When the mold has minor wear, it can accurately repair it and use the hardness characteristics to restore the mold accuracy and ensure production.
Sports equipment: Some outdoor sports equipment, such as the metal tip of the trekking pole, use its corrosion resistance and wear resistance to ensure safety and life.

WELDING POSITIONS:All

Chemical composition %.

Item	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Requirements	0.25-0.4	0.6	0.5	0.03	0.03	12.0-14.0	0.6	0.75	0.75
Example Value	0.32	0.3	0.3	0.01	0.02	13.2	0.2	0.03	0.02

Welding Requirements.

1) Application codes and project specifications should always be referred to for specific requirements
2) Actual mechanical properties will be dependent on specific welding procedure (including shieldinggas, flux, PWHT etc) and should always be confirmed by approval of an appropriate welding procedure.

AWS A5.9 ER2209

Characteristics：

The main component of the welding wire is 22Cr-9Ni-3MO-N, which is an austenite-ferrite duplex stainless steel MIG welding wire. It can be welded in all positions. Since the deposited metal contains about 40% ferrite, the deposited metal has both the comprehensive performance of austenitic stainless steel and the stress corrosion resistance of ferritic stainless steel, thus becoming an emerging material in the application of the petrochemical industry. Excellent welding workability - smooth wire feeding, stable arc, beautiful forming, and very little spatter.

Application：

Commonly used in petrochemical, shipbuilding and other industries, corresponding to the welding of steel 022Cr22Ni5MO3N (SUS 2205)

Power polarity:DC+

Chemical composition %.

Item	C	Mn	Si	Cr	Ni	Mo	P	S	Cu	N
AWS Standard	≤0.030	0.5-2.00	≤0.9	21.5-23.5	7.5-9.5	2.5-3.5	≤0.030	≤0.030	≤0.75	0.08-0.2
Example Value	0.023	1.62	0.40	22.5	8.75	3.23	0.011	0.009	0.18	0.16

Welding Requirements.

1. Shielding gas: pay attention to the purity of the shielding gas, the recommended mixed gas ratio is Ar+1~3%02.
2. Gas flow: 20~25L/min.
3. Dry extension length: 15~25mm.
4. Make sure to remove the rust layer, moisture, oil stains, dust, etc. on the welding part.
5. When welding outdoors, when the wind speed is greater than 1.5m/s, windproof measures should be taken, and appropriate windproof measures must be taken to prevent the occurrence of pores. The above suggestions are for reference only. In specific operations, the on-site conditions shall prevail.

AWS A5.9 ER2553

Characteristics：

1.Excellent alloy composition: It is a duplex stainless steel welding wire with high chromium, nickel and molybdenum content, and has both austenite and ferrite characteristics. The alloy elements make it have good performance.

2.Excellent corrosion resistance: It has strong tolerance to chloride ion media, such as seawater and chemical media, excellent resistance to pitting and crevice corrosion, and the passivation film plays a protective role.

Application：

For welding matching ferritic-austenitic superduplex stainless steel basematerials containing ~1.5%Cu. The addition of Cu provides enhanceccorrosion resistance to sulphuric acid in comparison to other superduplexalloys, the Cu also provides benefits in terms of wear resistance and cavitatiorresistance.The ER2553 superduplex wire, unlike the ER2594, is not overalloyed with Niand can therefore,in the as-welded condition, have high ferrite. For thisreason for many applications, in particular the welding of castings, the ER2553 weld metal will be subiect to a full solution anneal heat treatment.ER2553 superduplex stainless steel finds widespread use in many industrie!including: offshore,oil & gas, pulp & paper, chemical and petrochemical.Typical applications include pumps, valves, fans, impellors, and fasteners.

Power polarity:DC+

Chemical composition %.

Item	C	Mn	Si	Cr	Ni	Mo	Pren	Cu	N
Example Value	0.02	1.1	0.40	25.1	6.3	3.6	40.7	1.8	0.23

Mechanical properties of weld deposit

Tensile strength, Rm:	Elongation, 4d/5d:	Impact ISO-V, -45°C:
2750MPa.	>20%.	≥45](TIG)，≥27J(MIG).

Welding Requirements.

1) Application codes and project specifications should always be referred to for specific requirements

2) Actual mechanical properties will be dependent on specific welding procedure (including shieldinggas, flux, PWHT etc) and should always be confirmed by approval of an appropriate welding procedure.

AWS A5.9 ER16-8-2

Characteristics：

1. It has a low ferrite number (FN: 1-5), excellent low-temperature impact toughness of -196℃, and a maximum application temperature of 800℃.
2. It has good high-temperature anti-embrittlement performance and creep strength.

Application：

Mainly used for welding austenitic stainless steels such as 304H, 316H, 321 and 347H.

Power polarity: DC-

Chemical composition.

Item	C	Mn	Si	S	P
AWS Standard	0.04-0.10	1.0-2.0	0.3-0.6	0.02max	0.03max
Item	Cr	Ni	Mo	Cu	
AWS Standard	14.5-16.5	7.5-9.5	1.0-2.0	0.3max	

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥550 MPa	≥620 MPa	≥40%

Welding Requirements.

1. Pulse arc current is used to obtain a stable jet arc, which is particularly suitable for stainless steel, thin plates, vertical welding, and butt welding.
2. Strictly remove impurities such as oil, rust, and moisture from the welding area during welding.
3. Use 100% argon as the shielding gas, and the shielding gas flow rate should be 15-25L/min.

AWS A5.9 ER209

Characteristics：

ER209 is an austenitic stainless steel welding wire that meets AWS A5.9 standard. This welding wire is mainly used for welding stainless steel and alloys of similar composition, and has excellent welding process performance and mechanical properties.

Application：

1. Commonly used for welding austenitic stainless steel such as Nitronic® 30.
2. Suitable for gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW).

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.05max	0.09max	4.0-7.0	0.03max	0.03max	20.5-24.0
Item	Ni	Mo	Cu	N	V	
AWS Standard	9.5-12.0	1.5-3.0	0.75max	0.10-0.30	0.10-0.30	

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥271 MPa	≥794 MPa	13%

Welding Requirements.

1. Suitable for gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW).
2. The pulse arc current can obtain a stable jet arc, which is particularly suitable for welding stainless steel, thin plates, vertical welding, and butt welding.
3. Strictly remove impurities such as oil, rust, and moisture from the welding area during welding.

AWS A5.9 ER218

Characteristics：

ER218 is a high manganese-silicon austenitic stainless steel welding wire that meets AWS A5.9 standards. This welding wire is strengthened by adding nitrogen (N), has high toughness and good wear resistance.

Application：

1.ER218 is most commonly used for welding Nitronic® 60 substrate.
2.It can also be used for welding different types of alloys, such as mild steel and stainless steel, and for anti-corrosion coating directly on mild steel.
3.Suitable for parts that require high resistance to wear and seizure, such as fasteners, engine valves, shear pins, bushings, shafts, etc.

Power polarity:DC-

Chemical composition.

Item	C	Cr	Ni	Mo	Mn	Si
AWS Standard	0.07	17.2	8.6	0.75max	8.2	3.9
Item	P	S	N	Fe	Cu	
AWS Standard	0.03	0.02	0.12	Bal	0.75max	

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥271 MPa	≥794 MPa	13%

Welding Requirements.

1. Suitable for gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW).
2. Use 90He/7.5Ar/2.5Co2 or 69Ar/30He/1Co2 as shielding gas.
3. Generally controlled at around 4-6mm. If the arc is too long, it is easy to produce defects such as pores. If the arc is too short, its wettability will deteriorate.

AWS A5.9 ER219

Characteristics：

ER219 is an austenitic stainless steel welding wire that has been enhanced by adding nitrogen (N) to enhance its strength. It has high toughness and good wear resistance. This welding wire is suitable for welding stainless steel and alloys of similar composition, and has excellent welding process performance and mechanical properties.

Application：

1. Commonly used for welding austenitic stainless steel such as Nitronic® 40.
2. Suitable for gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW).

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.05max	0.90max	4.0-7.0	0.03max	0.03max	20.5-24.0
Item	Ni	Mo	Cu	N	V	
AWS Standard	9.5-12.0	1.5-3.0	0.75max	0.10-0.30	0.10-0.30	

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥275 MPa	≥515 MPa	15%

Welding Requirements.

1. Suitable for gas metal arc welding (GMAW) and gas tungsten arc welding
2. Use 100% argon as the shielding gas, and the shielding gas flow rate should be 15-25L/min.
3. Strictly remove impurities such as oil, rust, and moisture from the welding area during welding.

AWS A5.9 ER240

Characteristics：

ER240 is an austenitic stainless steel welding wire with high toughness and good wear resistance. This welding wire is suitable for welding stainless steel and alloys of similar composition, and has excellent welding process performance and mechanical properties.

Application：

1. Commonly used for welding austenitic stainless steel such as Nitronic® 60.
2. Suitable for gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW).

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.05max	1.0max	1.0max	0.03max	0.03max	17.0-19.0
Item	Ni	Mo	Cu	N		
AWS Standard	4.0-6.0	0.75max	0.75max	0.10max		

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥748 MPa	≥412 MPa	34%

Welding Requirements.

1. Suitable for gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW).
2. Use 100% argon as the shielding gas, and the shielding gas flow rate is preferably 15-25L/min.
3. The pulse arc current can obtain a stable spray arc, which is particularly suitable for stainless steel, thin plates, vertical welding, and butt welding.

AWS A5.9 ER307

Characteristics：

1. High manganese content: Due to the high manganese content, the crack sensitivity is low.
2. Adding silicon: The molten iron has good fluidity, good welding operability, stable arc, beautiful shape, less spatter, and can be welded in all positions.

Application：

1. Commonly used in special occasions such as nuclear submarines and bulletproof steel plates that require non-magnetic properties.
2. Can also be used for welding dissimilar steels that are difficult to weld and prone to cracking.
3. Marine oil, natural gas, pressure vessels, chemicals, military industry, transportation, mining, water conservancy and other mechanical industries

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.04-0.14	0.30-0.65	3.30-4.75	0.03max	0.03max	19.5-22.0
Item	Ni	Mo	Cu	V	N	
AWS Standard	8.0-10.7	0.05max	0.75max	0.10max	0.10max	

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥285 MPa	≥590 MPa	≥30%

Welding Requirements.

1. MIG welding is recommended to use 97%Ar+3%O2 shielding gas jet transition welding, and TIG welding must use pure argon protection.
2. The welding area must be thoroughly cleaned of surface impurities such as oil, rust, and moisture to prevent pores and cracks during welding. When cleaning, the groove surface and the surrounding area must be polished to produce a metallic luster.
3. Too much or too little welding line energy will seriously affect the weld formation, mechanical properties, crack resistance, and weld density, etc., and should attract more attention.

AWS A5.9 ER307Si

Characteristics：

ER307Si is a 21Cr-9Ni-6Mn pure austenitic stainless steel welding wire. Due to its high Mn content, it has low crack sensitivity. With the addition of Si, the molten iron has good fluidity, good welding operation performance, stable arc, beautiful appearance and less spatter.

Application：

1. Commonly used in special occasions such as nuclear submarines and bulletproof steel plates that require non-magnetic properties.
2. Can also be used for welding dissimilar steels that are difficult to weld and prone to cracking.
3. Widely used in offshore oil, natural gas, pressure vessels, chemicals, military industry, transportation, mining, water conservancy and other mechanical industries

Power polarity:DC-

Chemical composition.

Item	C	Mn	Si	Cr	Ni	Mo
AWS Standard	0.04-0.14	6.5-8.0	0.65-1.00	18.5-22.0	5.00-10.75	0.75max
Item	P	S	Cu			
AWS Standard	0.03max	0.03max	0.75max			

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥285 MPa	≥953 MPa	13%

Welding Requirements.

1. Heat treatment temperature: 1227°C - 1312°C
2. Use 100% argon or Ar+(1%~3%)O2 as the shielding gas, and the shielding gas flow rate should be 20-25L/min.
3. Strictly remove rust, moisture, oil, dust and other impurities at the welding point during welding.

AWS A5.9 ER308(1)

Characteristics：

1. High nickel-chromium content: has good corrosion resistance and oxidation resistance.
2. Add silicon: improve welding performance, reduce welding defects, and improve the fluidity and smoothness of the weld.

Application：

1. Commonly used in manufacturing and repairing stainless steel structures, such as chemical equipment, pressure vessels, pipelines, etc.
2. Suitable for gas shielded metal arc welding (GMAW) and gas tungsten arc welding (GTAW).

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.08-0.12	0.50-1.00	1.00-2.00	0.04max	0.03max	17.00-19.00
Item	Ni	Mo	Cu	N		
AWS Standard	8.0-10.0	0.75max	0.75max	0.10max		

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥205 MPa	≥515 MPa	≥35%

Welding Requirements.

1. Welding method: Applicable to gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW).
2. Shielding gas: Use 100% argon or Ar+(1%~3%)O2 as shielding gas, and the shielding gas flow rate is preferably 20-25L/min.
3. Arc length: Generally controlled at about 4-6mm. If the arc is too long, it is easy to produce defects such as pores. If the arc is too short, its wettability will deteriorate.

AWS A5.9 ER308(2)

Characteristics：

1. ER308 welding wire has good welding process performance, its weld metal has good mechanical properties and intergranular corrosion resistance, and the weld crack resistance is good
2. Due to its high chromium and nickel content, it has excellent corrosion resistance and is suitable for a variety of industrial environments

Application：

1. Such as welding processes in the fields of petrochemical, food processing, pharmaceutical equipment, etc.
2. Commonly used for welding 18-8, 18-12 and 20-10 austenitic stainless steel

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.08-0.12	0.60max	1.00-2.50	0.03max	0.03max	19.50-22.00
Item	Ni					
AWS Standard	9.0-11.0					

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥205 MPa	≥515 MPa	≥35%

Welding Requirements.

1. Welding method: Applicable to gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW).
2. Shielding gas: Use 100% argon or Ar+(1%~3%)O2 as shielding gas, and the shielding gas flow rate is preferably 20-25L/min.
3. Arc length: Generally controlled at about 4-6mm. If the arc is too long, it is easy to produce defects such as pores. If the arc is too short, its wettability will deteriorate.

AWS A5.9 ER308H

Characteristics：

1. High carbon content: The carbon content of ER308H welding wire is between 0.04% and 0.08%, providing higher high temperature strength
2. Excellent welding performance: It has good fluidity and stable arc characteristics, and good welding forming. In addition, ER308H welding wire has good oxidation resistance, is not easy to produce pores and inclusions during welding, and has high strength of the welded joint and excellent mechanical properties

Application：

1. The products are widely used in many industries such as ships, marine engineering, petrochemicals, boilers, pressure vessels, electricity, machinery, pipelines, vehicles, etc.
2. Used for welding 18% Cr – 10% Ni austenitic stainless steel, suitable for service temperatures up to +700°C, the base material is 1.4948/AISI 304H

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.04-0.08	0.60max	1.00-2.50	0.03max	0.03max	19.50-22.00
Item	Ni					
AWS Standard	9.0-11.0					

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥205 MPa	≥515 MPa	≥35%

Welding Requirements.

1. Welding method: Applicable to gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW).
2. Shielding gas: Use 100% argon or Ar+(1%~3%)O2 as shielding gas, and the shielding gas flow rate is preferably 20-25L/min.
3. Arc length: Generally controlled at about 4-6mm. If the arc is too long, it is easy to produce defects such as pores. If the arc is too short, its wettability will deteriorate.

AWS A5.9 ER308L

Characteristics：

1. The carbon content of ER308L welding wire is controlled below 0.03%, which reduces the precipitation of intergranular carbides and improves the resistance to intergranular corrosion.
2. It has good fluidity and stable arc characteristics, good welding forming and less spatter.
3. Due to its high chromium and nickel content, it has excellent corrosion resistance and is suitable for a variety of industrial environments.

Application：

1. The products are widely used in petrochemical industry, pressure vessels, food processing machinery, medical equipment, fertilizer equipment, textile machinery, nuclear reactors, etc.
2. Suitable for service temperature from -196°C to +350°C.
3. Mainly used for welding austenitic stainless steel such as 304L, 321, 347, etc.

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.03max	0.60max	1.00-2.50	0.03max	0.03max	19.50-22.00
Item	Ni					
AWS Standard	9.0-11.0					

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥205 MPa	≥515 MPa	≥35%

Welding Requirements.

1. Welding method: Applicable to gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW).
2. Shielding gas: Use 100% argon or Ar+(1%~3%)O2 as shielding gas, and the shielding gas flow rate is preferably 20-25L/min.
3. Arc length: Generally controlled at about 4-6mm. If the arc is too long, it is easy to produce defects such as pores. If the arc is too short, its wettability will deteriorate.

AWS A5.9 ER308LMo

Characteristics：

1. The carbon content of ER308LMo welding wire is controlled below 0.03%, which reduces the precipitation of intergranular carbides and improves the intergranular corrosion resistance.
2. It contains a higher molybdenum (Mo) content, usually between 2.0% and 3.0%, which makes it excellent in corrosion resistance and high temperature strength.
3. It has good fluidity and stable arc characteristics, good welding forming and less spatter.
4 Due to its high chromium and nickel content, it has excellent corrosion resistance and is suitable for a variety of industrial environments.

Application：

1. The products are widely used in petrochemical, pressure vessels, food processing machinery, medical equipment, fertilizer equipment, textile machinery, nuclear reactors, etc.
2. Suitable for service temperatures up to +700°C, the base material is 1.4948/AISI 304H.
3. Mainly used for welding austenitic stainless steels such as 304L, 321, 347, etc.

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.03max	0.60max	1.00-2.50	0.03max	0.03max	19.50-22.00
Item	Ni	Mo				
AWS Standard	9.0-11.0	2.00-3.00				

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥205 MPa	≥515 MPa	≥35%

Welding Requirements.

1. Welding method: Applicable to gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW).
2. Shielding gas: Use 100% argon or Ar+(1%~3%)O2 as shielding gas, and the shielding gas flow rate is preferably 20-25L/min.
3. Arc length: Generally controlled at about 4-6mm. If the arc is too long, it is easy to produce defects such as pores. If the arc is too short, its wettability will deteriorate.

AWS A5.9 ER308LSi

Characteristics：

1.ER308LSi welding wire has a higher silicon content, usually between 0.65% and 1.00%, which makes it have better fluidity during welding, more beautiful weld formation, stable arc and less spatter.

2.The carbon content is less than 0.03%, which reduces the precipitation of intergranular carbides and thus improves the resistance to intergranular corrosion.

3.It has good fluidity and stable arc characteristics, good welding formation and less spatter.

4.Due to its high chromium and nickel content, it has excellent corrosion resistance and is suitable for a variety of industrial environments.

Application：

1. The products are widely used in petrochemical, pressure vessels, food processing machinery, medical equipment, fertilizer equipment, textile machinery, nuclear reactors, etc.
2. Suitable for welding 0Cr19Ni9 stainless steel structures with working temperature below 300℃.
3. Mainly used for welding ASTM 304L, 308L, 304LN stainless steel.

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.03max	0.65-1.00	1.00-2.50	0.03max	0.03max	19.50-22.00
Item	Ni	Mo	Cu			
AWS Standard	9.0-11.0	0.75max	0.75max			

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥205 MPa	≥205 MPa	≥35%

Welding Requirements.

1. Pay attention to the temperature and humidity. It is recommended that the indoor temperature be above 5°C, the relative humidity not exceed 60%, and a certain distance from the ground and walls (about 30cm).
2. Strictly remove rust, moisture, oil, dust and other impurities at the welding point during welding.

AWS A5.9 ER308Mo

Characteristics：

1.ER308Mo welding wire contains a high molybdenum (Mo) content, usually between 2.0% and 3.0%, which makes it excellent in corrosion resistance and high temperature strength.

2.It has good fluidity and stable arc characteristics, good welding forming and less spatter.

3.Due to its high chromium and nickel content, it has excellent corrosion resistance and is suitable for a variety of industrial environments

Application：

1. The products are widely used in petrochemical, pressure vessels, food processing machinery, medical equipment, fertilizer equipment, textile machinery, nuclear reactors, etc.
2. Suitable for service temperatures up to +700°C, the base material is 1.4948/AISI 304H.
3. Mainly used for welding austenitic stainless steel such as 304L, 321, 347, etc.

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.08max	0.60max	1.00-2.50	0.03max	0.03max	19.50-22.00
Item	Ni	Mo				
AWS Standard	9.0-11.0	2.00-3.00				

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥205 MPa	≥515 MPa	≥35%

Welding Requirements.

1. Welding method: Applicable to gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW).
2. Shielding gas: Use 100% argon or Ar+(1%~3%)O2 as shielding gas, and the shielding gas flow rate is preferably 20-25L/min.
3. Arc length: Generally controlled at about 4-6mm. If the arc is too long, it is easy to produce defects such as pores. If the arc is too short, its wettability will deteriorate.

AWS A5.9 ER308Si

Characteristics：

1.ER308Si welding wire contains a higher silicon (Si) content, usually between 0.65% and 1.00%, which makes it have better fluidity during welding, more beautiful weld formation, stable arc and less spatter.

2. It has good fluidity and stable arc characteristics, good welding formation and less spatter.

3. Due to its high chromium and nickel content, it has excellent corrosion resistance and is suitable for a variety of industrial environments

Application：

1. The products are widely used in petrochemical industry, pressure vessels, food processing machinery, medical equipment, fertilizer equipment, textile machinery, nuclear reactors, etc.

2. Suitable for welding 0Cr19Ni9 stainless steel structures with working temperature below 300℃.

3. Mainly used for welding 18-8, 18-12 and 20-10 austenitic stainless steel.

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.08max	0.65-1.00	1.00-2.50	0.03max	0.03max	19.50-22.00
Item	Ni	Mo	Cu			
AWS Standard	9.0-11.0	0.75max	0.75max			

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥259 MPa	≥669 MPa	≥31%

Welding Requirements.

1. Recommended storage conditions in warehouses: room temperature above 10~15℃ (maximum 40℃), maximum relative humidity of 60%

2. Shielding gas: Use 100% argon or Ar+(1%~3%)O2 as shielding gas, and the shielding gas flow rate is preferably 20-25L/min.

3. Arc length: Generally controlled at about 4-6mm. If the arc is too long, it is easy to produce defects such as pores. If the arc is too short, its wettability will deteriorate.

AWS A5.9 ER309(2)

Characteristics：

1.H12Cr24Ni13 welding wire contains high chromium (Cr) and nickel (Ni) content, usually 22%Cr-12%Ni, which makes it excellent in corrosion resistance and high temperature strength.

2.It has good fluidity and stable arc characteristics, good welding forming and less spatter.

3.Due to its high chromium and nickel content, it has excellent corrosion resistance and is suitable for a variety of industrial environments.

Application：

1. The product is widely used in the same type of stainless steel structures, composite steel and dissimilar steel structures in the manufacture of equipment such as petrochemicals and synthetic fibers. It can also be used for surfacing welding of transition layers inside nuclear reactors and pressure vessels and welding of tower internal components.

2. It is often used for welding of carbon steel and stainless steel, or for welding of martensitic and ferritic stainless steels with poor toughness.

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.12max	0.30-0.65	1.00-2.50	0.03max	0.03max	23.0-25.0
Item	Ni	Mo	Cu			
AWS Standard	12.0-14.0	0.75max	0.75max			

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥542 MPa	≥714 MPa	≥21%

Welding Requirements.

1. Pay attention to the temperature and humidity. It is recommended that the indoor temperature be above 5°C, the relative humidity not exceed 60%, and a certain distance from the ground and walls (about 30cm).

2. Use 100% argon or Ar+ (1%~3%) O2 as the protective gas, and the protective gas flow rate should be 20-25L/min.

AWS A5.9 ER309(3)

Characteristics：

1. HO3Cr24Ni13 welding wire contains high chromium (Cr) and nickel (Ni) content, usually 22%Cr-12%Ni, which makes it excellent in corrosion resistance and high temperature strength.
2. It has good fluidity and stable arc characteristics, good welding forming and less spatter.
3. Due to its high chromium and nickel content, it has excellent corrosion resistance and is suitable for a variety of industrial environments.

Application：

1. The product is widely used in the same type of stainless steel structures, composite steel and dissimilar steel structures in the manufacture of equipment such as petrochemicals and synthetic fibers. It can also be used for surfacing welding of transition layers inside nuclear reactors and pressure vessels and welding of tower internal components.
2. It is often used for welding of carbon steel and stainless steel, or for welding of martensitic and ferritic stainless steels with poor toughness.

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.12max	0.30-0.65	1.00-2.50	0.03max	0.03max	23.0-25.0
Item	Ni	Mo	Cu			
AWS Standard	12.0-14.0	0.75max	0.75max			

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥542 MPa	≥714 MPa	≥21%

Welding Requirements.

1. Pay attention to the temperature and humidity. It is recommended that the indoor temperature be above 5°C, the relative humidity not exceed 60%, and a certain distance from the ground and walls (about 30cm).
2. Use 100% argon or Ar+ (1%~3%) O2 as the protective gas, and the protective gas flow rate should be 20-25L/min.

AWS A5.9 ER309

Characteristics：

1.ER309 welding wire contains high chromium (Cr) and nickel (Ni) content, usually 22%Cr-12%Ni, which makes it excellent in corrosion resistance and high temperature strength.

2.It has good fluidity and stable arc characteristics, good welding forming and less spatter.

3.Due to its high chromium and nickel content, it has excellent corrosion resistance and is suitable for a variety of industrial environments.

Application：

1. The product is widely used in petrochemical industry, thermal power plants, etc.
2. Commonly used for welding carbon steel and stainless steel, or for welding martensitic and ferritic stainless steel with poor toughness
3. Mainly used for welding austenitic stainless steel such as 304, 304N, 305, 308, 309, etc.

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.08max	0.60max	1.00-2.50	0.03max	0.03max	22.0-24.0
Item	Ni	Mo	Cu			
AWS Standard	12.0-14.0	0.75max	0.75max			

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥542 MPa	≥714 MPa	≥21%

Welding Requirements.

1. Pay attention to the temperature and humidity. It is recommended that the indoor temperature be above 5°C, the relative humidity not exceed 60%, and a certain distance from the ground and walls (about 30cm).
2. Suitable for gas metal arc welding (GMAW) and gas tungsten arc welding (GTAW)

AWS A5.9 ER309L

Characteristics：

1. The carbon content of ER309L welding wire is controlled below 0.03%, which reduces the precipitation of intergranular carbides and improves the resistance to intergranular corrosion.
2. It contains higher chromium (Cr) and nickel (Ni) content, usually 22%Cr-12%Ni, which makes it excellent in corrosion resistance and high temperature strength.
3. It has good fluidity and stable arc characteristics, good welding forming and less spatter.

Application：

1. The product is widely used in the same type of stainless steel structures, composite steel and dissimilar steel structures in the manufacture of equipment such as petrochemicals and synthetic fibers. It can also be used for surfacing welding of transition layers inside nuclear reactors and pressure vessels and welding of tower internal components.
2. It is often used for welding of carbon steel and stainless steel, or for welding of martensitic and ferritic stainless steels with poor toughness.

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.03max	0.30-0.65	1.00-2.50	0.03max	0.03max	23.0-25.0
Item	Ni	Mo	Cu			
AWS Standard	12.0-14.0	0.75max	0.75max			

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥542 MPa	≥714 MPa	≥21%

Welding Requirements.

1. Pay attention to the temperature and humidity. It is recommended that the indoor temperature be above 5°C, the relative humidity not exceed 60%, and a certain distance from the ground and walls (about 30cm).
2. Use 100% argon or Ar+ (1%~3%) O2 as the protective gas, and the protective gas flow rate should be 20-25L/min.

AWS A5.9 ER309LMo

Characteristics：

1.ER309LMo welding wire contains high chromium (Cr), nickel (Ni) and molybdenum (Mo) content, usually 22%Cr-12%Ni-2.0%Mo-3.5%Mo, which makes it excellent in corrosion resistance and high temperature strength.

2.It has good fluidity and stable arc characteristics, good welding forming and less spatter.

3.Due to its high chromium and nickel content, it has excellent corrosion resistance and is suitable for a variety of industrial environments.

Application：

1. The product is widely used in the same type of stainless steel structures, composite steel and dissimilar steel structures manufactured by petrochemical, synthetic fiber and other equipment. It can also be used for nuclear reactors, pressure vessels, internal transition layer surfacing and tower internal component welding.

2. Commonly used for welding carbon steel and stainless steel, or for welding martensitic and ferritic stainless steel with poor toughness.

3. In multi-layer surface surfacing, in order to achieve a low carbon content when using ER316L or ER317L as the subsequent surfacing layer, the first layer usually needs to use low-carbon ER309LMo.

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.03max	0.30-0.65	1.00-2.50	0.03max	0.03max	23.0-25.0
Item	Ni	Mo	Cu			
AWS Standard	12.0-14.0	2.00-3.50	0.75max			

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥542 MPa	≥714 MPa	≥21%

Welding Requirements.

1. Pay attention to the temperature and humidity. It is recommended that the indoor temperature be above 5°C, the relative humidity not exceed 60%, and a certain distance from the ground and walls (about 30cm).

2. Use 100% argon or Ar+ (1%~3%) O2 as the protective gas, and the protective gas flow rate should be 20-25L/min.

AWS A5.9 ER309LSi

Characteristics：

1.ER309LSi welding wire contains a higher silicon (Si) content, usually between 0.65% and 1.00%, which makes it have better fluidity during welding, more beautiful weld formation, stable arc and less spatter.

2.Contains higher chromium (Cr) and nickel (Ni) content, usually 22%Cr-12%Ni, which makes it excellent in corrosion resistance and high temperature strength.

3.With good fluidity and stable arc characteristics, it has good welding formation and less spatter.

Application：

1. The product is widely used in the same type of stainless steel structures, composite steel and dissimilar steel structures manufactured by petrochemical, synthetic fiber and other equipment. It can also be used for nuclear reactors, pressure vessels, internal transition layer surfacing and tower internal component welding.

2. Commonly used for carbon steel and stainless steel dissimilar material welding, or for martensitic and ferritic stainless steel welding with poor toughness.

3. In multi-layer surface surfacing, in order to achieve a low carbon content when using ER316L or ER317L as the subsequent surfacing layer, the first layer usually needs to use low-carbon ER309LSi.

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.03max	0.65-1.00	1.00-2.50	0.03max	0.03max	23.0-25.0
Item	Ni	Mo	Cu			
AWS Standard	12.0-14.0	0.75max	0.75max			

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥542 MPa	≥714 MPa	≥21%

Welding Requirements.

1. Pay attention to the temperature and humidity. It is recommended that the indoor temperature be above 5°C, the relative humidity not exceed 60%, and a certain distance from the ground and walls (about 30cm).

2. Use 100% argon or Ar+ (1%~3%) O2 as the protective gas, and the protective gas flow rate should be 20-25L/min.

AWS A5.9 ER309Mo

Characteristics：

1.ER309Mo welding wire contains high chromium (Cr), nickel (Ni) and molybdenum (Mo) content, usually 22%Cr-12%Ni-2.0%Mo-3.5%Mo, which makes it excellent in corrosion resistance and high temperature strength.

2.It has good fluidity and stable arc characteristics, good welding forming and less spatter.

3.Due to its high chromium and nickel content, it has excellent corrosion resistance and is suitable for a variety of industrial environments.

Application：

1. The product is widely used in the same type of stainless steel structures, composite steel and dissimilar steel structures manufactured in petrochemical, synthetic fiber and other equipment. It can also be used for nuclear reactors, pressure vessels, internal transition layer surfacing and tower internal component welding.

2. Commonly used for carbon steel and stainless steel dissimilar material welding, or for martensitic and ferritic stainless steel welding with poor toughness.

3. In multi-layer surface surfacing, in order to achieve a low carbon content when using ER316L or ER317L as the subsequent surfacing layer, the first layer usually needs to use low-carbon ER309LMo

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.03max	0.30-0.65	1.00-2.50	0.03max	0.03max	23.0-25.0
Item	Ni	Mo	Cu			
AWS Standard	12.0-14.0	2.00-3.50	0.75max			

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥542 MPa	≥714 MPa	≥21%

Welding Requirements.

1. Pay attention to the temperature and humidity. It is recommended that the indoor temperature be above 5°C, the relative humidity not exceed 60%, and a certain distance from the ground and walls (about 30cm).

2. Use 100% argon or Ar+ (1%~3%) O2 as the protective gas, and the protective gas flow rate should be 20-25L/min.

AWS A5.9 ER309Si

Characteristics：

1.ER309Si welding wire contains a higher silicon (Si) content, usually between 0.65% and 1.00%, which makes it have better fluidity during welding, more beautiful weld formation, stable arc and less spatter.

2.Contains higher chromium (Cr) and nickel (Ni) content, usually 22%Cr-12%Ni, which makes it excellent in corrosion resistance and high temperature strength.

3.It has good fluidity and stable arc characteristics, good welding formation and less spatter.

Application：

1. The product is widely used in the same type of stainless steel structures, composite steel and dissimilar steel structures in the manufacture of equipment such as petrochemicals and synthetic fibers. It can also be used for surfacing welding of transition layers inside nuclear reactors and pressure vessels and welding of tower internal components.

2. It is often used for welding of carbon steel and stainless steel, or for welding of martensitic and ferritic stainless steels with poor toughness.

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.08max	0.65-1.00	1.00-2.50	0.03max	0.03max	22.0-25.0
Item	Ni	Mo	Cu			
AWS Standard	12.0-14.0	0.75max	0.75max			

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	≥542 MPa	≥714 MPa	≥21%

Welding Requirements.

1. Pay attention to the temperature and humidity. It is recommended that the indoor temperature be above 5°C, the relative humidity not exceed 60%, and a certain distance from the ground and walls (about 30cm).

2. Use 100% argon or Ar+ (1%~3%) O2 as the protective gas, and the protective gas flow rate should be 20-25L/min.

AWS A5.9 ER310(2)

Characteristics：

1. Excellent high temperature resistance and oxidation resistance.
2. Suitable for a variety of welding methods, including TIG and MIG welding.
3. Good weld formation and good wettability.

Application：

1. High temperature resistant products: such as high temperature furnaces (such as SUS310S), coal coking equipment, etc.
2. Dissimilar material welding: suitable for welding of different materials, such as welding of stainless steel and carbon steel.
3. Chemical equipment: suitable for chemical equipment that requires high corrosion resistance and high temperature performance.
4. Marine engineering: suitable for equipment manufacturing and maintenance in marine environments.

Power polarity:DC-

Chemical composition.

Item	C	Si	Mn	P	S	Cr
AWS Standard	0.09max	0.50max	1.66max	0.02max	0.01max	25.5-27.5
Item	Ni					
AWS Standard	20.5-22.5					

Mechanical properties.

Mechanical properties	Yield strength MPa	Tensile strength MPa	Elongation %
AWS Standard	⩾ 370 MPa	⩾ 550 MPa	≥35%

Welding Requirements.

1. Generally, preheating is not required, but for thick plates or complex structures, the preheating temperature can be controlled at 100-150°C.
2. The interlayer temperature is controlled at 150-200°C to prevent overheating of the weld and grain growth.
3. The weld should be smooth and uniform, without pores, cracks and slag inclusions.