GB/T 5293 ——
AWS A5.17 EH10K
EN ISO 14171——

AK EH10K

Description

EH10K is a solid SAW wire engineered for stable arc characteristics, good penetration, and uniform weld metal quality. It is suitable for carbon and low-alloy steel welding where dependable mechanical properties and efficient deposition are required. The wire supports smooth operation in automatic and semi-automatic welding lines.

Application Scenario

EH10K is suitable for heavy steel fabrication, pipe manufacturing, structural beam production, pressure vessel fabrication, and industrial equipment manufacturing. It performs well in workshops that require high productivity, continuous welding, and reliable joint quality for medium to thick steel sections in standardized production.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Cr	Mo	Cu
Requirement	0.07-0.15	0.05-0.25	1.30-1.70	0.025	0.025	——	——	——	0.35
Actual Result	0.11	0.15	1.56	0.010	0.010	——	——	——	0.10

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	——	——	——	——
Actual Result	——	——	——	——

GB/T 36034 S62 A/P 4 FB-SU M2 M2

AWS A5.23 F9A/P4-EF1

EN ISO 26304 - A:S 554 FB (S3NiMo)

AK EF1

Description: Submerged arc welding wire for 620MPa high-strength steel, the main component 1.3%Ni—0.3%Mo; the arc combustion is stable during welding, the slag removal is easy, and the weld bead is beautiful; the weld metal has excellent mechanical properties and high X-ray qualification rate.

Application: For welding of large power stations, boilers, high pressure vessels, steam pipes, etc..

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Cr	Mo	——
Requirement	0.07-0.15	0.15-0.35	0.90-1.70	0.015	0.020	0.95-1.70	——	0.25-0.55	——
Actual Result	0.08	0.21	1.08	0.009	0.013	1.32	——	0.31	——

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	550-700	≥470	20	54J(0℃)
Actual Result	605	535	26	75

GB/T 36034S 62A 2 FB-SUN1M3

AWS A5.23 F9A0-EF2

EN ISO 26304 - B:S 62 A 2 FB SUN1M3

AK EF2

Description: EF2 is a high-quality high-strength low-temperature submerged arc welding wire. With the corresponding flux, the deposited metal has excellent low temperature impact toughness.

Application: With flux (such as SJ101, etc.), it can be used for welding of structures such as offshore platforms, port machinery, lifting and transportation equipment, vehicles, and petrochemicals.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Cr	Mo	Cu
Requirement	0.10-0.18	0.20	1.70-2.40	0.025	0.025	0.40-0.80	——	0.40-0.65	0.35
Actual Result	0.12	0.15	2.20	0.015	0.012	0.56	——	0.47	0.20

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	620-760	≥ 540	20	27J(-40℃)
Actual Result	665	590	24	113

GB/T 36034 S 62A.P4 FB-SUN2M33

AWS A5.23 F9A/P4-EF3

EN ISO 26304 - B:S 62AP4 FB SUN2M33

AK EF3

Description: EF3 is a low alloy high strength steel submerged arc welding wire. The content of S and P is low, and the mechanical properties are good.

Application: With AKJ616 flux, it is suitable for submerged arc welding of nuclear power, boiler, pressure vessel ASME SA508 Gr.3 Class 1, 13MnNiMoR and other steels.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Cr	Mo	Cu
Requirement	0.10-0.18	0.30	1.50-2.40	0.025	0.025	0.70-1.10	——	0.40-0.65	0.35
Actual Result	0.16	0.20	2.17	0.007	0.010	0.89	——	0.48	0.30

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	620-760	≥ 540	20	27J(-40℃)
Actual Result	675	596	26	143

GB/T 12470 S552 FB-SU1CM

AWS A5.23 F8P0-EB2-B2

EN ISO 24598-A:SS CrMo1

AK EB2

Description: EB2 is a 1.25%Cr-0.5%Mo series pearlitic heat-resistant steel submerged arc welding wire. With the corresponding flux, the weld metal with excellent mechanical properties can be obtained.

Application: With flux (such as AKJ105, etc.), it is used for welding 1.25%Cr-0.5%Mo pearlitic heat resistant steel, such as T11 steel of heat-resistant steel pipeline structure.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Cr	Mo	Cu
Requirement	0.07-0.15	0.05-0.30	0.45-1.0	0.025	0.025	——	1.0-1.75	0.45-0.65	0.35
Actual Result	0.09	0.20	0.58	0.007	0.009	——	1.24	0.50	0.20

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)	PWHT (℃*h)
Requirement	550-700	≥470	20	27J(-20℃)	620*1
Actual Result	630	570	24	110	690*5

GB/T 12470 S 55 2 FB-SU1CM

AWS A5.23 F8P0-EB2R-B2

EN ISO 24598 - A:S S CrMo1

AK EB2R

Description: EB2 is a 1.25%Cr-0.5%Mo series pearlitic heat-resistant steel submerged arc welding wire. With the corresponding flux, the weld metal with excellent mechanical properties can be obtained.

Application: With flux (such as AKJ105, etc.), it is used for welding 1.25%Cr-0.5%Mo pearlitic heat resistant steel, such as T11 steel of heat-resistant steel pipeline structure.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Cr	Mo	——
Requirement	0.05-0.15	0.3	0.45-1.0	0.03	0.03	——	1.0-1.75	0.40-0.65	——
Actual Result	0.07	0.20	0.68	0.007	0.009	——	1.24	0.55	——

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)	PWHT(℃*h)
Requirement	515-690	≥430	19	54J(-30℃)	620*1
Actual Result	630	570	24	90	690*2

GB/T 12470 S 62 2 FB-SU2C1M

AWS A5.23 F9P0-EB3-B3

EN ISO 14171 - A:S S CrMo2

AK EB3

Description: EB3 is 2.25%Cr-1.0%Mo pearlite heat resistant steel submerged arc welding wire. The weld with good mechanical properties can be obtained by matching the corresponding flux.

Application: The combined flux (such as AKJ101, etc.) is used for the welding of 2.25%Cr-1.0%Mo heat resistant steel.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Cr	Mo	Cu
Requirement	0.05-0.15	0.05-0.30	0.40-0.80	0.025	0.25	——	2.25-3.0	0.90-1.10	0.35
Actual Result	0.07	0.21	0.65	0.006	0.009	——	2.45	0.98	0.10

Typical Mechanical Properties:

	Tensile Strength MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)	PWHT(℃*h)
Requirement	620-760	≥ 540	17	27J(-20℃)	620*1
Actual Result	630	540	21	100	690*6

AK EB3R

AWS A5.23 EB3R

EN ISO 21952 - A:S CrMo2

Description: submerged arc welding wire of pearlitic heat-resistant steel with low content of impurity elements and S and P, good low temperature toughness and low sensitivity to temper embrittlement.

Application: he matching flux (such as AKJ150, etc.) is suitable for welding of heat resistant steels such as ASME SA387 Gr.22 Class 2, 12Cr2Mo1R, etc.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Cr	Mo	
Requirement	0.05-0.15	0.30	0.40-1.20	0.03	0.03	——	2.25-3.0	0.90-1.10	
Actual Result	0.07	0.21	0.85	0.006	0.009	——	2.45	0.98	

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact values (J)	PWHT(℃*h)
Requirement	620-760	≥ 540	17	27J(-30℃)	620*1
Actual Result	630	540	21	91	690*6

AK EA2

AWS A5.23 F8A/P0-EA2-A2

EN ISO 14171-A:S 46 2 FB S2Mo

Description: EA2 is a low alloy high strength steel submerged arc welding wire. With the corresponding flux, excellent comprehensive mechanical properties can be obtained.

Application: With flux (such as AKJ101, AKJ105, etc.) for the welding of low-alloy steel and high-strength steel such as Q420.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Cr	Mo	Cu
Requirement	0.05-0.17	0.20	0.95-1.35	0.025	0.025	——	——	0.45-0.65	0.35
Actual Result	0.09	0.12	1.12	0.005	0.009	——	——	0.53	0.20

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	550-700	≥470	20	27J(-20℃)
Actual Result	616	537	27	112

AK EA3

AWS A5.23 F9A/P0-EA3-A3

EN ISO 24598-A:-

Description: EA3 is a low alloy high strength steel submerged arc welding wire. With the corresponding flux, a weld with excellent mechanical properties and crack resistance can be obtained.

Application: Combined with flux (such as AKJ101, AKJ113, HJ250, etc.) for the welding of low-alloy high-strength structural steels such as Q490, 12 MnNiVR, 08 MnNiVR, etc..

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Cr	Mo	Cu
Requirement	0.05-0.17	0.20	1.65-2.20	0.025	0.025	——	——	0.45-0.65	0.35
Actual Result	0.13	0.15	2.15	0.010	0.015	——	——	0.60	0.20

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	620-760	≥ 540	17	27J(-20℃)
Actual Result	660	561	26	111

AK EA4

AWS A5.23 F8A/P0-EA4-A4

EN ISO 24598-A: S S (MnMo)

Description: EA4 is a low alloy high strength steel submerged arc welding wire. Combined with the corresponding flux, the combined mechanical properties can be obtained.

Application: With flux (such as AKJ101, AKJ105, etc.) for the welding of low-alloy high-strength structural steel such as Q490.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Cr	Mo	Cu
Requirement	0.05-0.15	0.20	1.20-1.70	0.025	0.025	——	——	0.40-0.65	0.35
Actual Result	0.08	0.16	1.40	0.004	0.008	——	——	0.52	0.10

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	550-700	≥470	20	27J(-30℃)
Actual Result	605	535	26	117

GB/T 14957 H10MnSiA

AWS A5.17 EM113K

EN ISO 14171-B:2010 SU25

AK EM113K

Description: EM113K is a copper-plated arc welding wire, which is matched with low manganese and silicon welds. The welding process has excellent performance.

Application: It is matched with melting welding HJ330, HJ360, HJ431 or sintering welding SJ101 and other alloy steels that can be used for welding carbon steel, boiler, pressure vessels, bridges, ships and other corresponding strength levels.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Cr	Mo	
Requirement	0.06-0.15	0.45-0.75	0.90-1.40	0.03	0.025	——	——	——	
Actual Result	0.05	0.30	1.25	0.004	0.008	——	——	——	

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	480-650	≥400	22	27J(-20℃)
Actual Result	553	450	27	98

AK H08Mn2NiMoE

Description: AK-H08Mn2NiMoE is a low alloy steel submerged arc welding wire. With the correspond ing flux, the deposited metal has excellent low temperature impact toughness.

Application: Combined with flux (such as SJ105, SJ105Q, etc.) for submerged arc welding of liquefied gas LPG transportation storage tanks, E490 steel, etc..

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Ti	Mo	
Requirement	0.12	0.45	1.60-2.10	0.015	0.020	0.2-0.5	0.15	0.2-0.5	
Actual Result	0.05	0.19	1.95	0.008	0.010	0.32	0.11	0.28	

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	610-770	≥ 500	18	50J(-40℃)
Actual Result	673	550	25	112

AK H08MnMoTiB

Description: AK-H08MnMoTiB is a submerged arc welding wire for pipeline steel. With the corresponding flux, the welding seam is beautiful in shape and has excellent mechanical properties and crack resistance.

Application: With flux (such as AKJ101G, AKJ102G, etc.), X65, X70, X80 pipeline steel and low-alloy high strength structural steel can be welded.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	B	Ti	Mo	
Requirement	0.12	0.15-0.50	1.40-2.00	0.015	0.020	0.10	0.15	0.2-0.45	
Actual Result	0.05	0.28	1.95	0.008	0.010	0.008	0.10	0.31	

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	≥ 590	≥ 500	20	50J(-40℃)
Actual Result	643	560	26	102

AK H08Mn2NiMoTiB

Description: AK-H08Mn2NiMoTiB is a submerged arc welding wire for X100 pipeline steel. With the corresponding flux, the welding seam is beautiful in shape and has excellent mechanical properties and crack resistance.

Application: With flux (such as SJ102G), it can be used for welding of X100 pipe line steel and low-alloy high-strength structural steel.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	B	Ti	Mo	Ni
Requirement	0.12	0.15-0.50	1.40-2.00	0.015	0.020	0.10	0.15	0.2-0.45	0.50-1.20
Actual Result	0.05	0.28	1.95	0.008	0.010	0.008	0.10	0.31	0.88

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	≥700	≥600	20	27J(-40℃)
Actual Result	813	660	26	98

GB/T 12470 F55P2-H08CrMoVA

AK H08CrMoVA

Description: AK-H08CrMoVA heat-resistant steel submerged arc welding wire is a 1.0%Cr-0.5%Mo-0.25%V series pearlite heat-resistant steel submerged arc welding wire. With the corresponding flux, the weld metal with excellent mechanical properties can be obtained.

Application: With flux (such as SJ101, HJ350, etc.), it is used for welding 1.0%Cr-0.5%Mo-0.25%V series pearlitic heat-resistant steel, such as 12Cr1MoV steel welding metal.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	V	Cr	Mo	Ni
Requirement	0.10	0.15-0.35	0.40-0.70	0.03	0.03	0.15-0.35	1.0-1.3	0.50-0.70	0.30
Actual Result	0.047	0.28	0.58	0.008	0.010	0.19	1.12	0.61	0.10

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Standard	550-700	≥470	20	27J(25℃)
Typical Value	622	539	23	77

AK H09MnDR

AWS A5.23 F7P5 EG-G

Description: H09MnDR is a kind of copper coated submerged arc welding wire used with SJ208DR and designed for automatic submerged arc welding. It has excellent slag removal, good bead appearance and good impact toughness under -46℃.
Application: Used for welding low temperature steel structures under -46℃, such as 16MnDR etc.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Cr	Ni		
Requirement	0.12	0.20	1.20-2.00	0.03	0.03	0.15	0.3		
Actual Result	0.047	0.20	1.68	0.008	0.01	0.09	0.11		

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Standard	≥ 500	≥400	20	27J(-45℃)
Typical Value	520	435	23	98

GB/T 12470 F55P2-H13CrMoA

AK H13CrMoA

Description: AK-H13CrMoA is a 1%Cr-0.5%Mo pearlitic heat-resistant steel submerged arc welding wire. With the corresponding flux, the weld metal with excellent mechanical properties can be obtained.

Application: With flux (such as SJ101, HJ250), it is used for welding 1%Cr-0.5%Mo pearlitic heat resistant steel, such as 15CrMo and 12CrMo steel of heat-resistant steel pipeline structure.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Cr	Mo		
Requirement	0.11-0.18	0.15-0.35	0.40-0.70	0.03	0.03	0.8-1.1	0.4-0.6		
Actual Result	0.07	0.25	0.65	0.008	0.01	0.95	0.45		

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	550-700	≥470	20	27J(-20℃)
Actual Result	590	490	23	86

GB/T 12470F76A4-H08Mn2NiMoA
AWS A5.23 F11A4-EM4-M4
EN ISO 26304-B:S 76 A4 FB SUN5M3

AK EM4

Description: AK-EM4 is a low alloy high strength steel submerged arc welding wire. With the corresponding flux, a weld with excellent mechanical properties can be obtained.

Application: With flux (such as SJ618, etc.), it is used for the welding of low-alloy and high-strength structural meshes such as lifting and transportation machinery and construction machinery, such as Q690.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Cr	Mo		
Requirement	0.10	0.20-0.60	1.40-1.80	0.01	0.015	0.60	0.50-0.65		
Actual Result	0.076	0.35	1.65	0.005	0.008	0.11	0.55		

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	760-900	≥680	15	27J(-40℃)
Actual Result	790	695	21.5	76

AK ENi1

AWS A5.23 F8A/P6-ENi1-Ni1
EN ISO 14171-AS46 4FB T2Ni1

Description: ENI1 is a low alloy steel buried arc welding wire. High-temperature toughness is excellent, the content of S and P is very low, and the mechanical performance is good.

Application: In conjunction with welding (such as SJ618, etc.), it is used for liquid alumane for storage containers and transportation pipes, and a low-temperature steel buried arc welding for low-temperature steel.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Cr	Ni		
Requirement	0.12	0.05-0.30	0.75-1.25	0.02	0.02	0.15	0.75-1.25		
Actual Result	0.06	0.20	1.03	0.005	0.008	0.01	0.91		

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	480-600	≥400	22	34J(-50℃)
Actual Result	570	495	27	111

AK ENi2

GB/T 5293 55A6 FB-SUN5
AWS A5.23 F8A8-ENi2-Ni2
EN ISO 14171-AS466FBT2Ni2

Description: Copper plated solid wire is used for single and multi-layer welding of various steels. It is especially suitable for welding in pressure vessel, petrochemical, marine, oil refining, railway and other industries.

Application: Copper plated solid wire for submerged arc welding. These are suitable for welding of steels of similar composition.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Cr	Ni		
Requirement	0.12	0.05-0.30	0.75-1.25	0.02	0.02	——	2.00-2.90		
Actual Result	0.06	0.20	1.03	0.005	0.012	0.01	2.56		

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	550-700	≥470	22	27J(-60℃)
Actual Result	605	519	27	118

AK ENi3

GB/T 5293S49A /P7FB-SUN7

AWS A5.23 F7P10-ENi3-Ni3

EN ISO 14171-AS427FBT2Ni3

Description: ENi3 is a 3.5NI low-temperature steel buried arc welding wire. S, P content is low, good mechanical properties, especially low temperature impact toughness.

Application: With welding (such as AKJ208DR,AKJ218D, etc.), it is suitable for welding of "coal chemical industry" and the pressure container of the petrochemical industry for-101°C,such as the buried arc welding of steel such as Asme SA 203GR.E.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Cr	Ni		
Requirement	0.13	0.03-0.30	0.60-1.20	0.025	0.03	——	2.80-3.90		
Actual Result	0.04	0.15	0.93	0.005	0.009	0.01	3.56		

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	480-660	≥400	22	27J(-60℃)
Actual Result	553	460	27	138

GB/T 5293S55A 6 FB-SUN2M1

AWS A5.23 F8A8-ENi5-Ni5

EN ISO 14171-A S 46 6 FBT2Ni5

AK ENi5

Description: ENi5 is a high quality submerged arc welding wire for low temperature steel. Low content of S and P, excellent low temperature toughness.

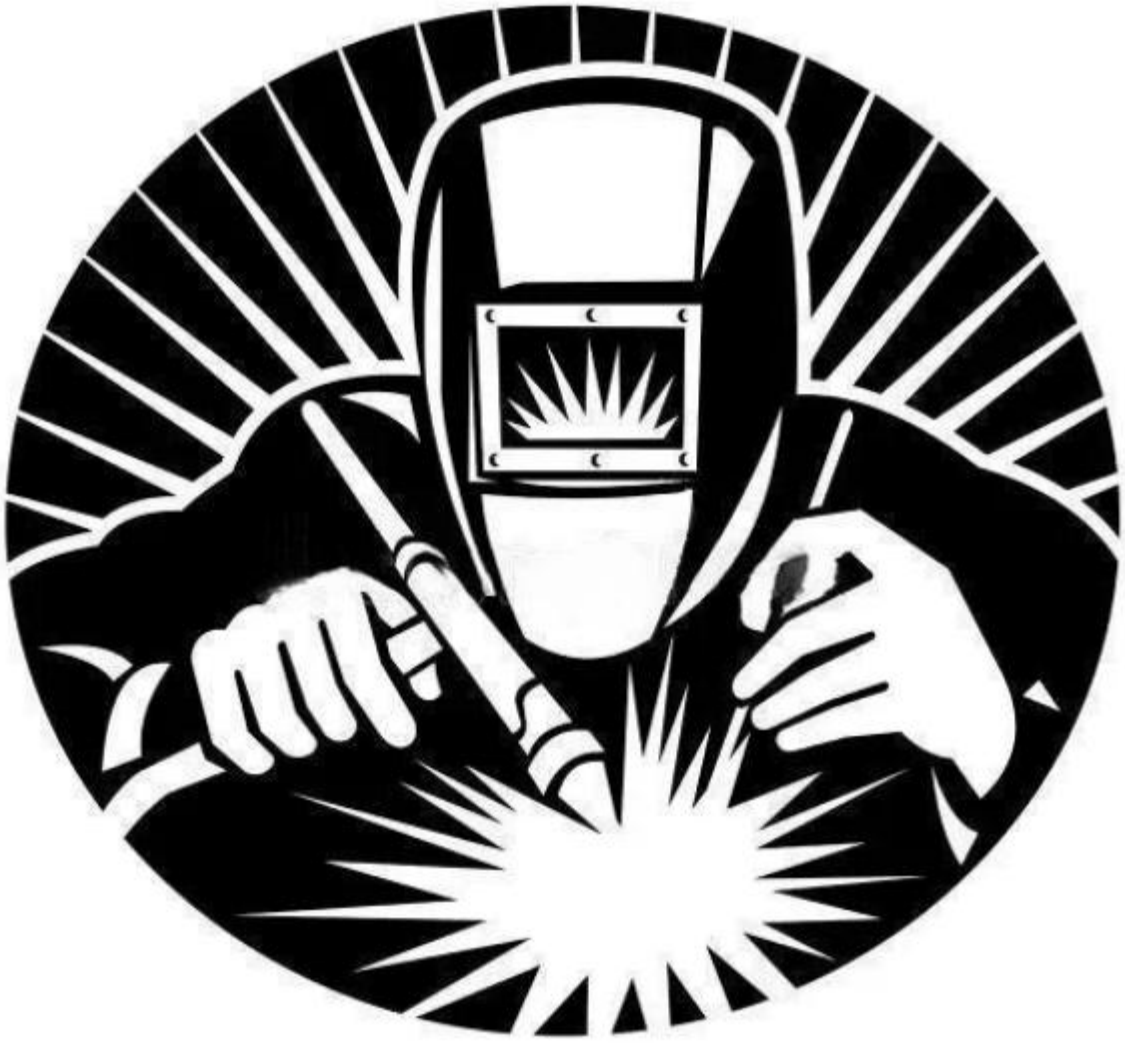
Application: With flux (such as SJ101, etc.), it is used for welding of cryogenic vessels, offshore platforms and ships, such as submerged arc welding of S355 steel.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Mo	Ni	Cu	
Requirement	0.12	0.05-0.30	1.20-1.60	0.020	0.020	0.10-0.30	0.75-1.25	0.35	
Actual Result	0.04	0.18	1.40	0.005	0.009	0.20	0.94	0.20	

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	550-700	≥470	22	27J(-60℃)
Actual Result	610	545	23	128



- Nickel-based welding rod and wire
- Aluminum welding wire
- Copper and copper alloy welding wire
- cast iron welding rod

GB/T 13814 ——

AWS A5.11 ENiCrWMo-1

EN ISO 14172——

AK ENiCrWMo-1

Description: ENiCrWMo-1 is a nickel-chromium-tungsten-molybdenum covered electrode developed for shielded metal arc welding of HAYNES 230 and similar high-temperature nickel alloys. It delivers excellent high-temperature strength, long-term thermal stability, and outstanding resistance to oxidation in prolonged service up to 2100°F.

Application: ENiCrWMo-1 is commonly used for welding furnace parts, gas turbine components, combustion hardware, heat-treatment equipment, and petrochemical processing systems. It is well suited for fabrications exposed to severe heat, thermal cycling, and oxidizing atmospheres where stable weld performance is critical.

Typical Chemical Compostion(%):

	C	Mn	Fe	P	S	Si	Cu	Ni	Co
Requirement	0.05-0.10	0.30-1.0	3.0	0.020	0.015	0.25-0.75	0.50	Rem.	5.0
Actual Result	0.09	0.75	1.50	0.010	0.005	0.60	0.20	Rem.	2.37
	Al	**Ti**	**Cr**	**Nb+Ta**	**Mo**	**V**	**W**	**La**	**B**
Requirement	0.50	0.10	20.0-24.0	——	1.0-3.0	——	13.0-15.0	——	——
Actual Result	0.10	0.02	22.84	——	2.25	——	13.65	——	——

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	≥620		20	
Actual Result	675		24	

GB/T 13814 ENi 6062

AWS A5.11 ENiCrFe-1

EN ISO 14172- ENi 6062

AK ENiCrFe-1

Description: AK-ENiCrFe-1 is a nickel-based alloy electrode with a low-hydrogen coating. The chemical composition code is NiCr15Fe8Nb. Because the weld contains NiCr15Fe8Nb, the deposited metal has good plasticity and crack resistance. It adopts DC reverse connection and can be welded in all positions.

Application: Mainly used for welding nickel-based alloys and dissimilar steels that require heat and corrosion resistance.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Fe	Ni	Cr	Nb
Requirement	0.08	0.80	3.50	0.015	0.02	11.00	≥62	13.0-17.0	0.5-4.0
Actual Result	0.015	0.40	2.50	0.008	0.005	5.40	72.1	15.73	2.88

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	≥ 550	≥ 360	27	
Actual Result	650	386	36	

GB/T 13814 ENi6133

AWS A5.11 ENiCrFe-2

EN ISO 14172- ENi6133

AK ENiCrFe-2

Description: Low hydrogen type of manual electrode,with nominal composition 70%Ni-15%Cr-8%Fe-2%Mn-2%Nb+Ta-1.5%Mo,is Ni-Cr-Fe alloy manual electrode;Base material can be forged or casted(weldable grade). Can adjust a wide temperature range from low temperature to 980C with the high alloy content; but at temperature higher than 820C, there will be deterioration of oxidation resistance and strength level;Stable arc,beautiful weld bead appearance,few spatter,easy slag removal,excellent blowhole resistance. and stable deposited metal mechanical properties, also has excellent low temperature impact toughness and high temperature oxidation resistance.

Application: Suitable for the welding of Ni-Cr-Fe series alloy, such as Incoloy 800, 800Halloy, Inconel 600,601 alloy,ASTMB613 and etc; Can also be used for welding 9% Ni steel and dissimilar metal between various alloy or alloy with creep resistance.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Fe	Ni	Cr	Mo
Requirement	0.10	0.75	1.00-3.50	0.015	0.03	12.00	≥62	13.0-17.0	0.5-2.5
Actual Result	0.036	0.48	3.19	0.003	0.009	7.04	70.8	14.60	1.63

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	≥ 550	≥ 360	30	
Actual Result	660	430	44	

GB/T 13814 ENi 6182

AWS A5.14 ERNiCrFe-12

EN ISO 14172- ENi 6182

AK ERNiCrFe-12

Description: Excellent welding properties with high build-up capacity and low dilution rate. Excellent resistance against temperature cycling conditions up to 1200°C and carburized medias. Excellent fatigue strength and creep properties.

Typical Chemical Compostion(%):

	C	Si	Mn	Y	Ti	Ni	Fe	Cr	Zr	Al
Requirement	0.15-0.25	0.50	0.5	——	0.1-0.2	Rem.	8.0-11.0	24.0-26.0	1.0	1.8-2.4
Actual Result	0.21	0.21	0.12	0.08	0.14	Rem.	10.40	25.10	0.05	2.0

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement				
Actual Result	715	512	25	50

GB/T 13814 ENi 6625

AWS A5.11 ENiCrMo-3

EN ISO 14172- ENi 6625

AK ENiCrMo-3

Description: Nominal composition is 60%Ni-22%Cr-9%Mo-5%Fe-3.5%Nb+Ta. is Ni-Cr-Mo type of manual electrode; Due to the high alloy content, can be used in a wide range of temperature, from low temperature to 540C; Has high strength level and corrosion resistance under room and high temperature, which includes pitting resistance, crack corrosion resistance, and stress release corrosion resistance in sulfuric acid environment; Stable arc, beautiful weld bead appearance,few spatter,easy slag removal, excellent blowhole resistance. and stable deposited metal mechanical properties.

Application: Suitable for welding Ni-Cr-Mo series alloy. such as Inconel 601/ 625, ASTM B443.Alloy 20, incoloy 800, 800H,825.can also be used for welding 9%Ni steel; Low hydrogen typemanual electrode, can be used for cladding on steel surface. and dissimilar steel welding between steel and nickel alloy.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Fe	Ni	Cr	Mo
Requirement	0.10	0.80	2.00	0.015	0.02	7.00	≥ 55	20.0-23.0	8.0-10
Actual Result	0.017	0.35	0.5	0.006	0.009	5.00	60.2	21.00	8.5

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	≥760	≥420	27	50J(-196℃)
Actual Result	780	460	35	83

EN ISO 14343-A:W Z 35 45Nb

AK ER3545Nb

Description: For further details, please contact the Sales Director: gan.zh@akweld.com

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Fe	Ni	Cr	Ti	Nb+Ta	W	Zr
Requirement	0.42-0.48	1.2-1.4	1.3-1.5	0.010	0.010	Bal.	44.0-46.0	34.0-36.0	0.13-0.16	0.9-1.0	0.2-0.25	0.05-0.1
Actual Result	0.454	1.22	1.38	0.0047	0.0044	15.97	44.29	34.46	0.138	0.955	0.22	0.088

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	——	——	——	
Actual Result	662	459	8	

GB/T 13814 ENi6117

AWS A5.11 ENiCrCoMo-1

EN ISO 14172-ENi6117

AK ENiCrCoMo-1

Description: AK-ENiCrCoMo-1 is a nickel-based alloy electrode with low-hydrogen coating. Its chemical composition is NiCr22Co12Mo. Can be welded in all positions.

Application: Mainly used for welding nickel-based alloys such as Inconel 600/601, Incoloy 800H, Incoloy 825 and HK40/HP40 iron-nickel-based high-temperature corrosion-resistant alloys.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Fe	Ni	Cr	Mo
Requirement	0.05-0.15	1.00	3.00	0.015	0.020	5.00	≥45	20.0-26.0	8.00-10.00
Actual Result	0.09	0.35	1.13	0.004	0.009	1.50	52.86	23.5	8.72
	Co	**Cu**	**Al**	**Ti**					
Requirement	9.00-15.00	0.50	1.50	0.60					
Actual Result	11.5	0.02	0.15	0.17					

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	≥620	≥400	22	
Actual Result	760	540	30	

GB/T 15620 SNi2061

AWS A5.14 ERNi-1

EN ISO 18274-S Ni 2061

AK ERNi-1

Description: Pure nickel type argon gas shielding TIG rod,with nominal composition: 86%Ni-3%Ti; Added Ti element to reduce the possibility of having blow holes while welding; stable arc. beautiful weld bead appearance, great iron water fluidity, excellent weld ability.

Application: Suitable for welding of industrial pure nickel forging and casting, such as 200, 201nickel alloy, nickel coated steel plate, ASTM B160,B161,B162.B163 and UNS N02200 and N02201.can also be used for dissimilar steel welding between nickel alloy and stainless steel and surface buildup welding.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Fe	Ni	Ti	Cr
Requirement	0.15	0.70	1.00	0.015	0.030	1.00	≥92	2.00-3.50	——
Actual Result	0.005	0.26	0.48	0.004	0.006	0.07	94.69	2.95	0.46

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	——	——	——	
Actual Result	550	——	36	

GB/T 15620 SNi4060

AWS A5.14 ERNiCu-7

EN ISO 18274-S Ni4060

AK ERNiCu-7

Description: Nominal composition is: 65%Ni-30%Cu-3%Mn-2%Ti; Beautiful weld bead appearance.great iron water fluidity,and excellent weld ability: With the right amount of Mn and Ti to effectively prevent heat cracking and blowholes from happening.

Application: Suitable for welding nickel copper alloy. such as Monel 400/404. ASTM B127and etc. ; Can also be used for welding dissimilar metal between steel and Ni-Cu alloy. and buildup welding on the steel surface;Often used in heat exchanger, pipe, vessel, and evaporator in offshore engineering, petrochemical industry and power plant industry.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Fe	Ni	Ti	Cu
Requirement	0.15	1.25	4.00	0.015	0.020	2.50	62-69	1.00	bal.
Actual Result	0.005	0.79	2.88	0.007	0.009	0.12	67.4	0.42	27.3

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	480	——	27	
Actual Result	563	——	41.5	

GB/T ——
AWS A5.14 EQNiFeCr-1
EN ISO 18274-SNi8065E
(NiFe30Cr21Mo3)

AK EQNiFeCr-1 & AK J88

Description: When nickel-based welding strip is used in arc welding with AK J88 flux, the deposited metal has high high temperature strength and oxidation resistance; it can resist corrosion from reducing media, and has excellent crack resistance and corrosion resistance. It is mainly used in fields such as the petrochemical industry that have high requirements for corrosion resistance and high temperature resistance.

AK J88 : The flux is a special flux for nickel-based strip arc welding with uniform particle size. It works well with the welding strip to ensure good welding technology, stable welding process, easy slag removal, smooth weld surface and good mechanical properties.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Fe	Ni	Cr	Mo
Requirement	0.05	0.5	1.0	0.03	0.03	≥ 22	38.0-46.0	19.5-23.5	2.50-3.50
Actual Result	0.015	0.23	0.62	0.001	0.015	31.24	40.23	21.50	2.70
	Cu	**Ti**	**Al**	**Other**	——	——	——	——	——
Requirement	1.5-3.0	0.6-1.2	0.20	0.5	——	——	——	——	——
Actual Result	2.10	1.01	0.12	0.22	——	——	——	——	——

AK J88 Main ingredients of flux:

	SiO_2 +TiO_2 +Al_3 O_2	MnO+CaO+MgO	S	P	CaF_2	Moisture Content	Impurity Content
Requirement	——	——	——	——	——	0.03	0.10
Actual Result	28	15	0.015	0.020	51		

GB/T 15620 SNi6267

AWS A5.14 ERNiCrMo-4

EN ISO 18274-S Ni6267

AK ERNiCrMo-4

Description: Ni-Cr-Mo type argon gas welding wire. with nominal composition of 57Ni-16Cr-15.5Mo-5.5Fe-4W; Excellent mechanical properties of deposited metal and excellent pitting resistance and crevice corrosion resistance; Stable arc, beautiful weld bead appearance,great iron water fluidity, with excellent weld ability.

Application: Suitable for the welding of Ni-Cr-Mo alloy,such as ASTM B574, B619, B628 and UNS N10276 and etc; can also be used for dissimilar metal welding on the surface, or the welding of 9Ni steel.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Fe	Ni	Cr	W	Mo
Requirement	0.02	0.08	1.00	0.030	0.040	4.00-7.00	bal.	14.50-16.50	3.00-4.50	15.00-17.00
Actual Result	0.018	0.05	0.52	0.005	0.010	5.68	58.21	15.88	3.77	15.68

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	690	——	27	
Actual Result	785	——	41	

GB/T 10858 S Al 4643

AWS A5.10 4643

EN ISO 18273 S Al 4643

AK ER4643

TIG/MIG

Description:
ER4643 is a heat-treatable Al-Si-Mg filler that welds much like ER4043, with similar flow, crack resistance, and machine settings. It also offers very good corrosion resistance, and after solution heat treatment and aging it can help 6061/6063/6070/6071 welds recover significantly more strength.

Application scenario:
Use ER4643 for 6xxx extrusions, structural fabrications, and similar-composition aluminum parts when you want 4043-like weldability but better post-heat-treat performance. It also fits low-dilution joints, heavier sections, and some thin-section brazing-style applications.

Typical Chemical Compostion(%):

	Si	Fe	Cu	Mn	Mg	Zn	Ga V	Ti
Requirement	3.60-4.60	0.80	0.10	0.05	0.10-0.30	0.10	——	0.15
Actual Result	3.82	0.58	0.02	0.02	0.153	0.06	——	0.12
	Zr	Al	Be	Other				
Requirement	——	Rem.	0.0003	0.05				
Actual Result	——	Rem.	0.0001	0.01				

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement				
Actual Result				

GB/T 10858 S Al 5087

AWS A5.10 ER5087

EN ISO 18273 S Al 5087

AK ER5087

TIG/MIG

Description:

ER5087 is a 5% magnesium aluminum filler, similar to 5356, but intended for higher tensile performance on magnesium-bearing base metals. Its zirconium addition refines the weld metal, creates a finer grain structure, and reduces the tendency for solidification cracking in restrained welds.

Application scenario:

Choose ER5087 for high-magnesium aluminum, up to about 5% Mg, when higher joint strength is required. It is well suited to marine, shipbuilding, automotive, railway, and cryogenic work where strong welds, crack resistance, and reliable MIG/TIG performance are important.

Typical Chemical Compostion(%):

	Si	Fe	Cu	Mn	Mg	Zn	Ga V	Ti
Requirement	0.25	0.40	0.05	0.70-1.10	4.50-5.20	0.25	——	0.15
Actual Result	0.20	0.25	0.01	0.85	5.10	0.10	——	0.05
	Zr	**Al**	**Be**	**Cr**	**Other**			
Requirement	0.10-0.20	Rem.	0.0003	0.05-0.25	0.05			
Actual Result	0.12	Rem.	0.0002	0.17	0.01			

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement				
Actual Result	285		18	

GB/T 10858 S Al 5356

AWS A5.10 ER5356

EN ISO 18273 S Al 5356

AK ER5356

TIG/MIG

Description: An Al-Mg alloy welding wire is mainly used where higher weld strength and greater ductility are required. 5356 has greater resistance to corrosion (saltwater) and a better color match after anodizing DC Reversed Polarity connection. Argon shielding gas is required.

Application: Welding for 5xxx series alloys.

Typical Chemical Compostion(%):

	Si	Fe	Cu	Mn	Mg	Zn	Al	Cr	Be	Ti
Requirement	0.25	0.40	0.10	0.05-0.20	4.5-5.5	0.10	bal.	0.05-0.20	0.0003	0.06-0.20
Actual Result	0.15	0.10	0.03	0.15	5.2	0.05	bal.	0.10	0.0002	0.10

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement	——	——	——	
Actual Result	105	205	17	

GB/T 10858 S Al 5249

AWS A5.10 ER5249

EN ISO 18273 S Al 5249

AK ER5249

TIG/MIG

Description:

ER5249 is a lower-magnesium Al-Mg-Mn-Zr filler classified as AlMg2Mn0.8Zr, typically containing about 1.6–2.5% Mg, 0.50–1.1% Mn, and 0.10–0.20% Zr. Published datasheets position it as a moderate-strength, ductile aluminum filler for controlled, lower-Mg weld deposits.

Application scenario:

Based on its chemistry and published guidance that higher Mg can raise stress -corrosion risk above 65°C, ER5249 is a practical choice for lower-Mg Al-Mg and Al-Mg-Mn fabrications where the weld metal should stay closer to base-metal chemistry. It fits tanks, sheet/plate assemblies, and corrosion-sensitive service.

Typical Chemical Compostion(%):

	Si	Fe	Cu	Mn	Mg	Zn	Ga V	Ti
Requirement	0.25	0.40	0.05	0.50-1.10	1.60-2.50	0.20	——	0.15
Actual Result	0.15	0.26	0.02	0.83	1.86	0.12	——	0.11
	Zr	Al	Be	Cr	Other			
Requirement	0.10-0.20	Rem.	0.0003	0.30	0.05			
Actual Result	0.15	Rem.	0.0001	0.10	0.02			

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement				
Actual Result	190		20	

GB/T 10858 S Al 2319

AWS A5.10 ER2319

EN ISO 18273 S Al 2319

AK ER2319

TIG/MIG

Description:

ER2319 is a heat-treatable aluminum-copper filler developed for 2219 and related alloys. It is used in high-strength structural and aircraft work, offering better strength and ductility than many 4xxx fillers on 2xxx alloys, plus improved resistance to stress-corrosion cracking and good elevated-temperature performance.

Application scenario:

Best for aerospace structures, high-load aluminum fabrications, pressure-related assemblies, and other demanding welded parts based on 2219-type material. Choose ER2319 when the job needs stronger weld metal, heat-treat response, and dependable performance in critical structural service rather than cosmetic appearance alone.

Typical Chemical Compostion(%):

	Si	Fe	Cu	Mn	Mg	Zn	V	Ti
Requirement	0.20	0.30	5.80-6.80	0.20-0.40	0.020	0.10	0.05-0.15	0.10-0.20
Actual Result	0.10	0.10	5.86	0.38	0.010	0.02	0.08	0.15
	Zr	Al	Be	Other				
	0.10-0.25	Rem.	0.0003	0.05				
	0.16	Rem.	0.0001	0.01				

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement				
Actual Result	380		5	

GB/T 10858 S Al 5554

AWS A5.10 ER5554

EN ISO 18273 S Al 5554

AK ER5554

TIG/MIG

Description:

ER5554 is an Al-Mg-Mn filler developed to match 5454-type aluminum. Compared with higher-magnesium fillers, it keeps Mg lower to better align with the base alloy, and it is specifically recommended for service at 150°F / 65°C and above where chemistry match and service stability matter.

Application scenario:

Use ER5554 for 5454 and similar base metals in chemical tanks, storage vessels, rail tank cars, trailers, and other transportation equipment exposed to elevated temperatures. It is a strong choice when you want moderate strength, corrosion resistance, and reliable long-term service instead of maximum weld strength.

Typical Chemical Compostion(%):

	Si	Fe	Cu	Mn	Mg	Zn	Ga V	Ti
Requirement	0.25	0.40	0.10	0.50-1.0	2.40-3.0	0.25	——	0.05-0.20
Actual Result	0.15	0.10	0.02	0.60	2.85	0.13	——	0.08
	Zr	Al	Be	Cr	Other			
Requirement	——	Rem.	0.0003	0.05-0.20	0.05			
Actual Result	——	Rem.	0.0001	0.12	0.01			

Typical Mechanical Properties:

	Tensile Strength (MPa)	Yield Stress (MPa)	Elongation (%)	Impact Values (J)
Requirement				
Actual Result	230		20	

GB/T 9460 CuSiMn

AWS A5.7 ERCuSi-A

EN ISO 24373 CuSi3Mn1

AK ERCuSi-A

TIG/MIG

Application: Applied to butt welding and surfacing welding of brass, especially suitable for MIG welding of galvanized steel sheets, and preheating is required for MIG surfacing welding of large weld ments. Pulse argon arc welding is recommended for surfacing steel.

Typical Chemical Compostion(%):

	Cu	Al	Fe	Mn	P	Pb	Si	Sn	Zn	Other
ISO 24373	bal.	0.02	0.50	0.50-1.5	0.05	0.02	2.8-4.0	0.20	0.40	0.50
AWS A5.7	bal.	0.01	0.50	0.50-1.5	——	0.02	2.8-4.0	1.0	1.0	0.50

Physical Properties Mechanical Properties:

Solids-Temperature	910℃	**Liquids-Temperature**	1025℃
Density	8.5kg/dm³	**Tensile Strength**	330-370N/mm²
Elongation	40%	**Brinell-Hardness**	80-90HB

GB/T 9460 CuAl9Ni5Fe3Mn2

AWS A5.7 ERCuNiAl

EN ISO 24373 CuAl9Ni5Fe3Mn2

AK ERCuNiAl

TIG/MIG

Application: Recommended for the welding and hard facing of copper-aluminum alloys, aluminum coated steel in machinery and chemical industry as well as for iron weldingin shipbuilding. Also excellent for the welding of brass tube and copper-aluminum that requires resistance to erosion.

Typical Chemical Compostion(%):

	Cu	Al	Fe	Mn	Ni	Pb	Si	Sn	Zn	Other
ISO 24373	bal.	8.5-9.5	3.0-5.0	0.6-3.5	4.0-5.5	0.02	0.10	——	0.10	0.50
AWS A5.7	bal.	0.01	3.0-5.0	0.6-3.5	4.0-5.5	0.02	0.10	——	0.10	0.50

Physical Properties Mechanical Properties:

Solids-Temperature	1015℃	**Liquids-Temperature**	1045℃
Density	7.5kg/dm³	**Tensile Strength**	450-560N/mm²
Elongation	10%	**Brinell-Hardness**	150-170HB

AK ERCuNiAl

TIG/MIG

GB/T 9460 CuAl9Ni5Fe3Mn2

AWS A5.7 ERCuNiAl

EN ISO 24373 CuAl9Ni5Fe3Mn2

Application: Recommended for the welding and hard facing of copper-aluminum alloys, aluminum coated steel in machinery and chemical industry as well as for iron weldingin shipbuilding. Also excellent for the welding of brass tube and copper-aluminum that requires resistance to erosion.

Typical Chemical Compostion(%):

	Cu	Al	Fe	Mn	Ni	Pb	Si	Sn	Zn	Other
ISO 24373	bal.	8.5-9.5	3.0-5.0	0.6-3.5	4.0-5.5	0.02	0.10	——	0.10	0.50
AWS A5.7	bal.	0.01	3.0-5.0	0.6-3.5	4.0-5.5	0.02	0.10	——	0.10	0.50

Physical Properties Mechanical Properties:

Solids-Temperature	1015℃	**Liquids-Temperature**	1045℃
Density	7.5kg/dm³	**Tensile Strength**	450-560N/mm²
Elongation	10%	**Brinell-Hardness**	150-170HB

AK ERCuSn-C

TIG/MIG

Application: Applied to the welding of copper and copper alloys, especially for butt welding of brass and steel, it is recommended to preheat when used for large thickness weld ments, and pulse argon arc welding is recommended for steel surfacing.

Typical Chemical Compostion(%):

	Cu	Al	Fe	Ni	P	Pb	Si	Sn	Zn	Other
ISO 24373	bal.	——	0.10	0.2	0.10-0.40	0.02	——	7.5-8.5	0.20	0.20
AWS A5.7	bal.	0.01	0.10	——	0.10-0.35	0.02	——	7.0-9.0	0.20	0.50

Physical Properties Mechanical Properties:

Solids-Temperature	875℃	**Liquids-Temperature**	1025℃
Density	8.8kg/dm³	**Tensile Strength**	260N/mm²
Elongation	20%	**Brinell-Hardness**	80HB

GB/T 9460 CuMn13Al8Fe3Ni2

AWS A5.7 ERCuMnNiAl

EN ISO 24373 CuMn13Al8Fe3Ni2

AK ERCuMnNiAl

TIG/MIG

Application: Best for the overlay welding of iron-casting and low-alloy steel that especially need corrosion resistance.

Typical Chemical Compostion(%):

	Cu	Al	Mn	Ni	Fe	Pb	Si	Sn	Zn	Other
ISO 24373	bal.	7.0-8.5	11.0-14.0	1.5-3.0	2.0-4.0	0.02	0.10	——	0.15	0.40
AWS A5.7	bal.	7.0-8.5	11.0-14.0	1.5-3.0	2.0-4.0	0.02	0.10	——	0.15	0.50

Physical Properties Mechanical Properties:

Solids-Temperature	945℃	**Liquids-Temperature**	985℃
Density	7.4kg/dm³	**Tensile Strength**	800-900N/mm²
Elongation	10%	**Brinell-Hardness**	180-240HB

GB/T 9460 CuAg1

AWS A5.7 CuAg1

EN ISO 24373 CuAg1

AK ERCuAg1

TIG/MIG

Application: Particularly desired for MIG welding of zinc-coated-steel in auto bodies. It is also recommended for brass,low-alloy copper,non-ferrous and low-metal steel and cast iron. An ideal material for making auto bodies.

Typical Chemical Compostion(%):

	Cu	Al	Mn	Ni	Fe	Pb	Si	Ag	As	Other
ISO 24373	≥99.5	0.01	0.20	0.3	0.05	0.01	0.10	0.8-1.2	0.05	0.20
AWS A5.7	≥99.5	0.01	0.20	0.3	0.05	0.01	0.10	0.8-1.2	0.05	0.20

Physical Properties Mechanical Properties:

Solids-Temperature	1070℃	**Liquids-Temperature**	1080℃
Density	8.9kg/dm³	**Tensile Strength**	200N/mm²
Elongation	30%	**Brinell-Hardness**	60HB

GB/T 9460 CuAl7

AWS A5.7 ERCuAl-A1

EN ISO 24373 CuAl7

AK ERCuAl-A1

TIG/MIG

Application: Especially suitable for welding carbon steel and stainless steel. The fluidity of the molten metal is good, the weld shape is beautiful, and it is also suitable for butt welding of steel and copper. Applied to shipbuilding and machinery manufacturing, it is recommended to use pulsed argon arc welding when welding multi-layer steel interlayers.

Typical Chemical Compostion(%):

	Cu	Al	Mn	Ni	P	Pb	Si	Sn	Zn	Other
ISO 24373	bal.	6.0-8.5	0.5	——	——	0.02	0.20	——	0.20	0.40
AWS A5.7	bal.	6.0-8.5	0.5	——	——	0.02	0.10	——	0.20	0.50

Physical Properties Mechanical Properties:

Solids-Temperature	1030℃	**Liquids-Temperature**	1040℃
Density	7.7kg/dm³	**Tensile Strength**	380-450N/mm²
Elongation	40-50%	**Brinell-Hardness**	100HB

GB/T 9460 CuAl10Fe1

AWS A5.7 ERCuAl-A2

EN ISO 24373 CuAl10Fe1

AK ERCuAl-A2

TIG/MIG

Application: It is suitable for surfacing welding of aluminum bronze on steel, wear-resistant and seawater corrosion-resistant, and is used in shipbuilding, machinery manufacturing, instrument and pump manufacturing. Pulse argon arc welding is recommended for multilayer surfacing.

Typical Chemical Compostion(%):

	Cu	Al	Mn	Ni	P	Pb	Si	Sn	Zn	Other
ISO 24373	bal.	8.5-11.0	——	——	——	0.02	0.10	——	0.02	0.50
AWS A5.7	bal.	8.5-11.0	——	——	——	0.02	0.10	——	0.20	0.50

Physical Properties Mechanical Properties:

Solids-Temperature	1030℃	**Liquids-Temperature**	1040℃
Density	7.6kg/dm³	**Tensile Strength**	621N/mm²
Elongation	20%	**Brinell-Hardness**	166HB

GB/T 9460 CuZn40Ni

AWS A5.7 ERCuZn-B

EN ISO 24373 CuZn40Ni

GB/T 9460 CuZn40Sn

AWS A5.7 ERCuZn-A

EN ISO 24373 CuZn40Sn

AK ERCuZn-A

TIG/MIG

Application: Brass oxygen-acetylene gas welding and carbon arc welding are used as filler materials. Widely used in brazing copper, steel, copper-nickel alloy, gray cast iron and inlaid carbide tools, etc..

Typical Chemical Compostion(%):

	Cu	Al	Mn	Ni	P	Pb	Si	Sn	Zn	Other
ISO 24373	57.0-61.0	0.01	——	——	——	0.05	——	0.25-1.0	bal.	0.50
AWS A5.7	57.0-61.0	0.01	——	——	——	0.05	——	0.25-1.0	bal.	0.50

Physical Properties Mechanical Properties:

Solids-Temperature	886℃	**Liquids-Temperature**	901℃
Density	8.45kg/dm³	**Tensile Strength**	375N/mm²
Elongation	35%	**Brinell-Hardness**	85HB

GB/T 9460 CuZn40Ni

AWS A5.7 ERCuZn-B

EN ISO 24373 CuZn40Ni

AK ERCuZn-B

TIG/MIG

Application: Brass welding wire containing a small amount of iron, silicon, and manganese has good fluidity of molten metal. Due to the existence of silicon, it can more effectively inhibit the evaporation of zinc. It can be used for gas protection of copper, steel, copper-nickel alloy, and gray cast iron. Argon arc welding, and inserting carbide tools. It needs to be preheated at 400-500°C before welding.

Typical Chemical Compostion(%):

	Cu	Al	Mn	Ni	P	Pb	Si	Sn	Zn	Other
ISO 24373	56.0-60.0	0.01	0.01-0.50	0.20-0.8	——	0.05	0.04-0.20	0.8-1.1	bal.	0.50
AWS A5.7	57.0-61.0	0.01	0.01-0.50	0.20-0.8	——	0.05	0.04-0.20	0.8-1.1	bal.	0.50

Physical Properties Mechanical Properties:

Solids-Temperature	866℃	**Liquids-Temperature**	882℃
Density	8.39kg/dm³	**Tensile Strength**	——
Elongation	——	**Brinell-Hardness**	——

GB/T 9460 CuZn40Fe1Sn1

AWS A5.7 ERCuZn-C

EN ISO 24373 CuZn40Fe1Sn1

AK ERCuZn-C

TIG/MIG

Application: Brass oxygen-acetylene gas welding and carbon arc welding are used as filler materials. Widely used in brazing copper, steel, copper-nickel alloy, gray cast iron and inlaid carbide tools, etc..

Typical Chemical Compostion(%):

	Cu	Al	Mn	Fe	P	Pb	Si	Sn	Zn	Other
ISO 24373	56.0-60.0	0.01	0.01-0.50	0.25-1.2	——	0.05	0.04-0.15	0.8-1.1	bal.	0.50
AWS A5.7	57.0-61.0	0.01	0.01-0.50	0.20-0.8	——	0.05	0.04-0.20	0.8-1.1	bal.	0.50

Physical Properties Mechanical Properties:

Solids-Temperature	866℃	**Liquids-Temperature**	888℃
Density	8.38kg/dm³	**Tensile Strength**	——
Elongation	——	**Brinell-Hardness**	——

GB/T 9460 CuZn40Ni10Sn1

AWS A5.7 ERCuZn-D

EN ISO 24373 CuZn40Ni10Sn1

AK ERCuZn-D

TIG/MIG

Application: It is used in machinery manufacturing, automation industry, steel furniture and other industries. It is used for surface anti-corrosion surfacing welding of cast steel, gray cast iron, copper alloy and nickel alloy parts. It is also suitable for butt welding of gray cast iron.

Typical Chemical Compostion(%):

	Cu	Al	Ni	Fe	P	Pb	Si	Sn	Zn	Other
ISO 24373	46.0-50.0	0.01	9.0-11.0	——	0.25	0.05	0.04-0.25	——	bal.	0.50
AWS A5.7	46.0-50.0	0.01	9.011.0	——	0.25	0.05	0.04-0.20	——	bal.	0.50

Physical Properties Mechanical Properties:

Solids-Temperature	890℃	**Liquids-Temperature**	935℃
Density	8.7kg/dm³	**Tensile Strength**	385N/mm²
Elongation	25%	**Brinell-Hardness**	120HB

GB/T 10044 EZNi-1

AWS A5.15 ENi-CI

EN ISO 1071 E C Ni-CI 3

AK ENi-CI

Description: A nickel-cored electrode designed to weld average grades cast irons .The weld metal is soft and easily machinable; deposition is performed on cold or slightly preheated material. It is suitable for joining cast irons to rectify casting and repair broken parts.

Application: Used to thin weld parts of cast irons and repair broken parts.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Fe	Al	Cu
Requirement	2.0	2.5	1.0	0.030	——	≥85	8.0	1.0	2.5
Actual Result	0 .23	0.97	0.16	0 .004	0 .024	97.2	1.1	0.24	0.003

Recommended welding parameters:

Diameter/mm		2.5	3.2	4.0
Welding current/A	F/H	70- 110	100- 140	140- 180
	V/ OH	——	——	——

GB/T 10044 EZNiFe-1

AWS A5.15 ENiFe-CI

EN ISO 1071 E C NiFe-1 3

AK ENiFe-CI

Description: A nickel-cored electrode designed to weld average grades cast irons .The weld metal is soft and easily machinable; deposition is performed on cold or slightly preheated material. It is suitable for joining cast irons to rectify casting and repair broken parts.

Application: Used to thin weld parts of cast irons and repair broken parts.

Typical Chemical Compostion(%):

	C	Si	Mn	S	P	Ni	Fe	Al	Cu
Requirement	2.0	4.0	2.5	0.030	——	45-60	bal.	1.0	2.5
Actual Result	0.59	0.93	0.26	0.004	——	55.1	bal.	0.18	0.025

Recommended welding parameters:

Diameter/mm		2.5	3.2	4.0
Welding current/A	F/H	70- 110	100- 140	140- 180
	V/ OH	——	——	——

Size： 10-60

AK J101

Description: AKJ101 is a fluorine-alkali sintered flux with an alkalinity of about 1.8. It is gray round particles with a particle size of 10~60 mesh (about 2.0~0.28mm). It can be used for both DC and DC power supply, and the welding wire is connected to the positive pole when welding with DC power supply. The arc is stable, the weld shape is beautiful, and the slag is easy to melt. The metal has excellent mechanical properties.

Application: with the corresponding welding wire (such as H08MnA, H10Mn2, JH-WQ1, JH-WGX2, etc.), mainly used for welding low carbon steel and some low alloy steel (such as 16Mn, x65, X70, 14MnNiq, WQ490D, WQ490E , Q345C etc.) structures and submerged arc welding of boiler pressure vessels, ships, bridges, oil pipelines, etc. Deposited metal has; good low temperature impact toughness.

Typical Chemical Compostion(%):

	SiO2+TiO2	CaO+MgO	S	P	CaF2	Al2 O3+MnO	——	——	——
Requirement	——	——	——	——	——	——	——	——	——
Actual Result	15- 25	25- 35	0.06	0.08	15- 25	20- 30	——	——	——

Notes on Usages:

1. The flux must be baked at 300°C~350°C for 2 hours before use.

2. Before welding, rust, oil, water and other impurities on the weldment should be removed.

Size： 10-60

AK J101Q

Description: AKJ101Q is a fluorine-alkali type sintered flux with an alkalinity ≥1.8 and a particle size of 10~60 mesh (about 2.0~0.28mm).It can be used for both DC and DC power supply,and the welding wire is connected to the positive pole when welding with DC power supply. The arc is stable, the weld shape is beautiful, and the slag is easy to deposit. The metal has excellent mechanical properties.

Application: Cooperate with corresponding welding wires (such as H08MnA, H10Mn2,JH-WQ1, JH-WGX2, etc.), mainly used for welding low carbon steel and some low alloy steels (such as 16Mn, x65, X70, 14MnNiq, WQ490D, WQ490E, etc.) structure and submerged arc welding of boiler pressure vessels, ships, bridges, oil pipelines, etc. Deposited metal has; good low temperature impact toughness.

Typical Chemical Compostion(%):

	SiO2+TiO2	CaO+MgO	S	P	CaF2	Al2 O3+MnO	——	——	——
Requirement	——	——	——	——	——	——	——	——	——
Actual Result	14- 23	24- 36	0.06	0.06	15- 25	20- 30	——	——	——

Notes on Usages:

1. The flux must be baked at 300°C~350°C for 2 hours before use.

2. Before welding, rust, oil, water and other impurities on the weldment should be removed.

Size： 10-60

AK J150

Description:

Application:

Typical Chemical Compostion(%):

	SiO2+TiO2	CaO+MgO	S	P	CaF2	Al2 O3+MnO	——	——	——
Requirement	——	——	——	——	——	——	——	——	——
Actual Result	14- 23	24- 36	0.035	0.040	15- 25	20- 30	——	——	——

Notes on Usages:

1. The flux must be baked at 300°C~350°C for 2 hours before use.

2. Before welding, rust, oil, water and other impurities on the weldment should be removed.

Size： 10-60

AK J301

Description: AKJ301 is a silicon-manganese type sintered flux with a basicity of about 1.0. It is black-gray round particles with a particle size of 10~60 mesh (about 2.0~0.28mm). It can be used for both DC and DC power supply, and the welding wire is connected to the positive pole when welding with DC power supply.The arc is stable, the weld shape is beautiful, the slag is easy to remove, and the deposited metal has excellent mechanical properties. It is especially suitable for welding various types of circular seams, with short slag and no flow phenomenon during welding.

Application: With corresponding welding wires (such as H08A, H08E, HO8MnA, etc.), it is mainly used for welding ordinary carbon steel and some low alloy steels (such as Q235, X65, etc.) structures and submerged arc welding of boiler pressure vessels, ships, bridges, oil pipelines, etc. The deposited metal has good low temperature impact toughness. It can be used for multi-pass welding, double-sided single-pass welding, and multi-wire submerged arc welding.

Typical Chemical Compostion(%):

	SiO2+TiO2	CaO+MgO	S	P	CaF2	Al2 O3+MnO	——	——	——
Requirement	——	——	——	——	——	——	——	——	——
Actual Result	25- 35	15- 25	0.06	0.08	5-15	30-40	——	——	——

Notes on Usages:

1. The flux must be baked at 300°C~350°C for 2 hours before use.

2. Before welding, rust, oil, water and other impurities on the weldment should be removed.

Size： 10-60

AK J501

Description: AKJ501 and JH-SJ501M are aluminum-titanium acidic sintered fluxes with a basicity of about 0.5~0.8. They are gray round particles with a particle size of 10~60 mesh (about 2.0~0.28mm). JH-SJ501M has a particle size of 14~16 mesh (about 1.18~0.28mm) and can be used for both DC and DC. When using DC power welding, the welding wire is connected to the positive electrode. The arc is stable, the weld shape is beautiful, and the slag is easy to deposit. The metal has excellent mechanical properties.

Application: With the corresponding welding wire (such as H08A, H08MnA, etc.), it is mainly used for submerged arc welding of low-carbon steel and some low-alloy steel (such as) boiler pressure vessels, ships, etc. The deposited metal has good low-temperature impact toughness. JH-SJ501M is especially suitable for high-speed welding of water -cooled walls of power plant boilers, and the welding speed can reach more than 70m/h.

Typical Chemical Compostion(%):

	SiO2+TiO2	CaO+MgO	S	P	CaF2	Al2 O3+MnO	——	——	——
Requirement	——	——	——	——	——	——	——	——	——
Actual Result	25- 35	15- 25	0.06	0.08	5-15	30-40	——	——	——

Notes on Usages:

1. The flux must be baked at 300°C~350°C for 2 hours before use.

2. Before welding, rust, oil, water and other impurities on the weldment should be removed.

Size: 10-60

AK J218DR

Description: .

Application: .

Typical Chemical Compostion(%):

	SiO_2+TiO_2	$CaO+MgO+Al_2O_2+MnO$	S	P	CaF2	——	——	——
Requirement	10-25	50-70	0.05	0.06	15-30	——	——	——
Actual Result	13.5	65.8	0.012	0.020	27.2	——	——	——

Size： 10-60

AK J208D

Description: .

Application: .

Typical Chemical Compostion(%):

	SiO_2+TiO_2	CaO+MgO	S	P	CaF2	Al_2O_2+MnO	——	——
Requirement	20	≥ 30	0.035	0.04	15-30	15-30	——	——
Actual Result	15	45	0.014	0.028	25	23.04	——	——

AK J607RH

GB/T 32533 E5915-GPU

AWS A5.5 E9015-G

Characteristics and Applications: AK-J607RH is a special low alloy steel electrode for pressure equipment with ultra -low hydrogen and high toughness, excellent welding performance, less spatter, beautiful shape, easy slag. It is used for welding 600MPA grade low alloy steel of pressure equipment with higher low temperature requirement, such as water, electricity and low temperature storage tank, or for welding between heat-resistant and low temperature low alloy steel.

Note:

1. The electrode must be baked for one hour at 380-400 ° C before using.
2. Impurities such as water, oil and embroidery must be removed from the surface of the welding part.
3. Short arc narrow pass welding, the maximum swing should not exceed three times the line diameter.

Chemical composition of deposited metal (mass fraction) :

	C	Si	Mn	S	P	Ni	Mo
Requirement	0.10	0.80	≥ 1.00	0.015	0.025	0.60-1.20	0.10-0.40
Actual Result	0.068	0.45	1.30	0.010	0.016	0.90	0.20

The mechanical properties of deposited metal were (620 ± 15 ° CX1H)

	Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function (J)
GB/NB Standard	≥ 590	≥490	≥ 16	≥27J/-20C
AWS Standard	≥620	≥ 530	≥ 17	——
Actual Result	640	540	27	120

Diffused hydrogen content of molten metal: ≤4.0mL/100g(mercury method or thermal conductivity method)
Molten metal X-ray detection requirements: Grade I
Recommended parameters: (Polarity: DC)

Diameter/mm		2.5*300	3.2*350	4.0*400	5.0*400
Current (A)	F/H	70- 100	90-130	140- 180	170-200
	V/OH	60-90	80- 120	130- 170	——

AK J62CF

NB/T 47018 E6215-G
GB/T 32533 E6215-G
AWS A5.5 E9015-G

Characteristics and Applications: AK-J62CF is a 620MPA grade low alloy steel electrode, the coating type is basic low hydrogen sodium type, the arc stability is good, the spatter is small, the weld shape is beautiful, the penetration is moderate, the slag is easy. The deposited metal has excellent ductility and crack resistance. It is suitable for welding 600MPA grade steel such as hydropower volute and pressure pipeline, and the same grade steel such as ship, bridge and building.

Note:

1. The electrode must be baked at 380 ° C for one hour before use.
2. Impurities such as water, oil and embroidery must be removed from the surface of the welding parts.
3. Short arc narrow pass welding, the maximum swing should not exceed three times the line diameter.

Chemical composition of deposited metal (mass fraction) :

	C	Si	Mn	S	P	Ni	Mo
Requirement	0.10	0.80	≥ 1.00	0.015	0.025	0.60-1.20	0.10-0.40
Actual Result	0.07	0.50	1.35	0.009	0.015	0.87	0.23

Note: In order to meet the requirements of group G alloy, the undiluted weld metal s hall be at least conducive to a minimum value in this table

	Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function (J)	Bending performance （D =4t， a =180º)
GB/NB Standard	≥620	≥ 530	≥ 15	≥ 54J/-50C	No defects
AWS Standard	≥620	≥ 530	≥ 17	——	——
Actual Result	670	580	25	120	Conformity

Diffused hydrogen content of deposited metal: ≤ 5.0mL/100g(mercury method or thermal conductivity method)
X-ray detection requirements for deposited metal: Grade I
Recommended parameters: (Polarity: DC)

Diameter/mm		2.5*300	3.2*350	4.0*400	5.0*400
Current (A)	**F/H**	70- 100	90-130	140- 180	170-200
	V/OH	60-90	80- 120	130- 170	——

AK ER60A

GB/T 8110 ER55-G

AWS A5.28 ER80S-G

Characteristics and Applications: AK-ER60A is low alloy steel copper-plated gas shielded wire, wire melting speed, arc stability, small spatter, beautiful weld shape, weld metal has good mechanical properties. Suitable for welding of 550 ~ 600MPa steel structure. Commonly used in hydropower, bridges, petrochemical, engineering machinery, coal mining machinery and other structures of the welding.

Note:

1. The protective gas is rich argon gas with a flow rate of 15-20L/min.
2. The impurities such as water, oil and embroidery must be removed from the welding area.
3. When the current is more than 250A, the wire dry elongation should be 20-25mm.

Chemical composition of deposited metal (mass fraction) :

	C	Si	Mn	S	P	Ni	Cu
Requirement	0.12	0.40	1.00-1.80	0.025	0.025	0.20-1.00	0.50
Actual Result	0.06	0.33	1.48	0.007	0.008	0.60	0.12

Mechanical properties of deposited metal:

		Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function (J)	Protective gas
Requirement		≥ 550	≥470	≥ 19	≥27J/-40℃	——
Actual Result	**Welding state**	579	482	28.5	125	Ar+20%C O_2
	Heat treatment 580℃x4h	618	526	27.5	119	

Recommended parameters: (Polarity: DC)

Diameter/mm		1.0	1.2	1.6	——
Current (A)	**F/H**	80-250	100-350	170-390	——
	V/OH	110-160	120-180	——	——

AK ER60SD

GB/T 8110 ER60-G

AWS A5.28 ER90S-G

Characteristics and applications: AK-ER60SD is low alloy steel copper-plated gas shielded wire, wire melting speed, arc stability, small spatter, beautiful weld shape, weld metal has good mechanical properties. Suitable for welding 600MPa steel structure. Commonly used in the same strength level of hydropower, bridges, petrochemical, engineering machinery, coal mining machinery and other structural steel welding.

Note:

1. The protective gas is rich argon or CO2 gas, the gas flow rate is 15-20L/min.
2. The impurities such as water, oil and embroidery must be removed from the welding place.
3. When the current is more than 250A, the wire dry elongation should be 20-25mm.

Chemical composition of deposited metal (mass fraction) :

	C	Si	Mn	S	P	Ni	Cu	Mo
Requirement	0.12	0.40-0.80	1.40-2.10	0.025	0.025	0.15	0.50	0.20-0.50
Actual Result	0.082	0.62	1.60	0.007	0.008	0.015	0.12	0.33

Mechanical properties of deposited metal:

	Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function (J)	Protective gas
Requirement	≥600	≥480	≥ 17	≥27J/-40℃	——
Actual Result	635	544	25.5	78	CO_2

Recommended parameters: (Polarity: DC)

Diameter/mm		1.0	1.2	1.6	——
Current (A)	F/H	80-250	100-350	170-390	——
	V/OH	110-160	120-180	——	——

AK ER65SD

GB/T 8110 ER65-G

AWS A5.28 ER90SG

Characteristics and applications: AK-ER65SD is Ni Mo type high toughness low alloy steel gas shielded welding wire, all position welding process performance is excellent, arc stability, small spatter, beautiful weld shape, deposited metal has good mechanical properties. Suitable for 650MPa steel structure welding, commonly used in hydropower, construction machinery, lifting machinery, ships, bridges, pipelines and pressure vessels and other structures of the welding.

Note:

1. The protective gas is rich argon gas with a flow rate of 15-20L/min.
2. The impurities such as water, oil and embroidery must be removed from the welding area.
3. When the current is more than 250A, the wire dry elongation should be 20-25mm.

Chemical composition of deposited metal (mass fraction) :

	C	Si	Mn	S	P	Ni	Cu	Mo	Al	Ti
Actual Result	0.078	0.59	1.85	0.004	0.012	0.78	0.09	0.27	0.01	0.09

Mechanical properties of deposited metal:

	Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function (J)		Protective gas
				-20℃	-40℃	
Requirement	≥650	≥ 560	≥ 15	≥47	——	——
Actual Result	692	618	25.5	105	100	CO_2
	745	678	25	113	100	Ar+20%CO_2

Recommended parameters: (Polarity: DC)

Diameter/mm		1.0	1.2	1.6	——
Current (A)	**F/H**	80-250	100-300	170-390	——
	V/OH	70-160	80-180	——	——

AK H08Mn2MoA
AK AF205

GB/T 36034 S62A2/A4 FB- SUM31（H08Mn2Mo)
GB /T 36037 SA FB 1
AWS A5.23M F62A2/A4-EA3-A3

Characteristics and applications: AK-H08Mn2MoA is a submerged arc welding wire for low alloy high strength steel, AK-AF205 is an alkali-fluoride type sintered flux with light gray spherical particle size of 10-60 mesh. The combination of AK-H08Mn2MoA and AK-AF205 has good welding performance, arc stability, good forming, easy slag removal, low diffused hydrogen content, good crack resistance and low temperature impact toughness of deposited metal. Suitable for the welding of 600MPA class low alloy steel structure such as ship, machinery manufacture, chemical industry, bridge, steel structure and so on.

Note:

1, before the use of flux must be 300 ~ 350 ° C baking 1 ~ 2 hours, welding wire before use should be dry, oil-free, rust-free state.

2, before welding should be strictly removed welding oil, rust, moisture and other impurities.

Flux Quality Requirements:

1, flux water content ≤0.10%

2, flux mechanical inclusions ≤0.30.

3, flux sulfur content s0.050%

4, flux phosphorus content ≤0.060%

Requirements for radiographic testing of deposited metals: Grade I

Chemical composition of deposited metal (mass fraction) :

	C	Si	Mn	S	P	Ni	Cu	Mo	Cr	Ti
Requirement	0.06-0.11	0.25	1.60-1.90	0.030	0.030	0.30	0.35	0.50-0.70	0.20	0.05-0.15
Welding Wire Actual Result	0.07	0.18	1.70	0.008	0.010	0.04	0.10	0.55	0.02	0.08
Molten metal Actual Result	0.06	0.24	1.80	0.006	0.014	0.05	0.08	0.46	0.03	0.02

Mechanical properties of deposited metal:

	Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function (J)	
GB/T	620-820	≥ 500	≥ 15	≥27J/-20℃	≥27J/-40℃
AWS	620-760	≥ 540	≥ 17	≥27J	≥27J
Actual Result	678	585	24	110	95

AK S60SD
AK AF217SD

GB/T 36034 S62A2/A4 FB- SUGN2M1
GB /T 36037 SA FB 1
AWS A5.23M F62A2/A4-EG-G

Characteristics and applications: AK-S60SD is a submerged arc welding wire for low alloy high strength steel, AK-AF217SD is a fluorine base type high basic ity sintered flux. The combination of AK-S60SD and AK-AF217SD, the size of flux is 10 ~ 60 mesh, the welding technology is good, the arc is stable, the slag is easy to be removed, the deposited metal has good low temperature impact toughness and crack resistance. It is suitable for the welding of 600MPa high strength steel structure in hydropower industry. It is often used in the low alloy welding of ship, machinery, chemical industry, bridge, steel structure and so on.

Note:

1, before the use of flux must be 300 ~ 350 ° C baking 1-2 hours, welding wire should be dry before use, no oil, Rust State

2, welding should be strictly removed before the welding area of oil, rust, moisture and other impurities,

3. When welding, preheat 150 ~ 300 ° C (depending on plate thickness and material) .

4. Recommended welding specification (taking Φ4.0 wire as an example) I = 500 ~ 550A, U = 28 ~ 32V, welding speed V = 50 ~ 55cm/min, interpass temperature 150 ~ 180 ° C.

5. To ensure the plasticity of deposited metal, it is necessary to de hydrogen at 200 ~ 240 °C for 2 ~ 4 hours after welding.

Flux Quality Requirements:

1. Flux water content ≤0.10%
2. Mechanical inclusions ≤0.30.
3. in flux, flux s 0.050%
4. Flux p content ≤0.060%

Deposited metal x-ray detection requirements: Grade I

Chemical composition of deposited metal (mass fraction) :

	C	Si	Mn	S	P	Ni	Mo
Welding Wire Actual Result	0.07	0.05	1.87	0.005	0.012	1.00	0.26
Molten metal Actual Result	0.05	0.15	1.70	0.010	0.015	0.86	0.27

Mechanical properties of deposited metal:

	Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function (J)	
GB/T	620-820	≥ 500	≥ 15	≥27J/-20℃	≥27J/-40℃
AWS	620-760	≥ 540	≥ 17	≥27J	≥27J
Actual Result	680	572	26	150	130

AK J707

GB/T 32533 E6915-GP

AWS A5.5 E10015-G

Characteristics and applications: AK-J707 is a high strength steel electrode with low hydrogen sodium coating. DC reverse connection can be used for all-position welding. Excellent welding process performance, low hydrogen diffusion in weld, with excellent low-temperature toughness and crack resistance. It is mainly used for welding of 700MPa high strength steel structure steel, also used for welding of bridge, boiler and other related parts with the same strength.

Note:

1. The electrode must be baked at 380 ° C for one hour before use.
2. Impurities such as water, oil and embroidery must be removed from the surface of the welding parts.
3. Short arc narrow pass welding, the maximum swing should not exceed three times the line diameter.

Note:

In order to meet the requirements of group G alloy, undiluted weld metal shall be at least conducive to a minimum of this table, with additional chemical composition negotiated between the supplier and the buyer)

Chemical composition of deposited metal (mass fraction) :

	C	Si	Mn	S	P	Ni	Mo
Requirement	0.15	0.80	≥ 1.00	0.030	0.030	≥0.50	≥0.20
Actual Result	0.084	0.42	1.59	0.003	0.014	1.04	0.23

Mechanical properties of deposited metal:

		Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function (J)
GB/NB		≥690	≥600	≥ 14	——
AWS		≥690	≥600	≥ 16	——
Actual Result	**Welding state**	774	649	23.5	75
	Heat treatment 620±15℃x1h	752	649	24	80

Diffused hydrogen content of deposited metal: ≤ 5.0mL/100g(mercury method or thermal conductivity method)

X-ray detection requirements for deposited metal: Grade I

Recommended parameters: (Polarity: DC)

Diameter/mm		2.5*300	3.2*350	4.0*400	5.0*400
Current (A)	**F/H**	70- 100	90-130	140- 180	170-220
	V/OH	60-90	80- 120	130- 170	——

GB/T 8110 ER69-G

AWS A5.28 ER100S-G

AK ER70SD

Characteristics and applications: AK-ER70SD is N iMo type 700MPa high toughness low alloy steel gas shielded welding wire, arc stability, small spatter, beautiful weld shape, deposited metal has good comprehensive mechanical properties. Suitable for welding 700MPA steel structure. Commonly used in construction machinery, lifting machinery, ships, bridges, hydropower, pipelines and pressure vessels and other structures of the welding.

Note:

1. The protective gas is argon-rich or CO2-rich gas with a flow rate of 15-20L/min.
2. The weld must be cleaned of water, oil, embroidery and other impurities.
3. When the current is more than 250A, the wire dry elongation should be 20-25mm.20- 25mm.

Chemical composition of deposited metal (mass fraction) :

	C	Si	Mn	S	P	Ni	Cu	Mo	Ti	Al
Actual Result	0.070	0.46	1.50	0.004	0.012	1.34	0.13	0.45	0.09	0.01

Mechanical properties of deposited metal:

	Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function(J)		Protective gas
				-20℃	-40℃	
Requirement	≥690	≥610	≥ 16	——	≥27	——
Actual Result	780	725	23	130	125	Ar+20% CO_2

Recommended parameters: (Polarity: DC)

Diameter/mm		1.0	1.2	1.6	——
Current (A)	F/H	80-250	100-300	170-390	——
	V/OH	70-160	80-180	——	——

AK S70
AK AF207

GB/T 36034 S69A4 FB-SUN4M2 （H08Mn2Ni2Mo）
GB /T 36037 SA FB 1
AWS A5.23M F69A4-EM4-M4

Characteristics and Applications: AK-S70 is a submerged arc welding wire for low alloy high strength steel, AK-AF207 is a fluorine-base type sintered flux. The combination of AK-S70 and AK-AF207 has the advantages of good welding technology, stable arc, easy slag removal and good low temperature impact toughness and crack resistance. Suitable for 700MPa high strength steel welding, commonly used in ships, machinery manufacturing, chemical industry, bridges, steel structures and other low-alloy welding of corresponding strength.

Note:

1. before the use of flux must be 300 ~ 350 ° C baking 1-2 hours, welding wire should be dry before use, no oil, Rust State
2.welding should be strictly removed before the welding area of oil, rust, moisture and other impurities,
3. When welding, preheat 150 ~ 300 ° C (depending on plate thickness and material) .
4. Recommended welding specification (taking Φ4.0 wire as an example) I = 500 ~ 550A, U = 28 ~ 32V, welding speed V = 50 ~ 55cm/min, interpass temperature 150 ~ 180 ° C.
5. To ensure the plasticity of deposited metal, it is necessary to de hydrogen at 200 ~ 240 °C for 2 ~ 4 hours after welding.

Flux Quality Requirements:

1. Flux water content ≤0.10%
2. Mechanical inclusions ≤0.30.
3 in flux, flux s 0.050%
4. Flux p content ≤0.060%

Deposited metal x-ray detection requirements: Grade I

Chemical composition of deposited metal (mass fraction) :

	C	Si	Mn	S	P	Ni	Mo	Cr	Cu
Welding Wire Actual Result	0.028	0.35	1.60	0.006	0.010	2.01	0.44	0.26	0.06
Molten metal Actual Result	0.030	0.39	1.53	0.002	0.010	1.84	0.45	0.25	0.07

Mechanical properties of deposited metal:

	Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function(J)	Impact function(J)
GB/T	690-890	≥ 550	≥ 14	——/-20℃	≥27J/-40℃
AWS	690-830	≥610	≥ 16	——	≥27J
Actual Result	720	660	22	110	80

AK J80SD

GB/T 32533 E7815-G

AWS A5.5 E11015-G H4

Characteristics and Applications: AK-J80SD is an ultra-low hydrogen low alloy electrode with high strength and toughness. It has excellent welding performance, low temperature impact toughness and crack resistance of deposited metal. It is suitable for the welding of spiral case and 800MPA base metal of pressure pipeline in water power equipment, and the welding of marine engineering ship and oil pipeline with the same strength.

Note:

1. The electrode is baked at 380 ° C for 1 ~ 2 hours before use, and then put into 100 ~ 150 ° C incubator.
2. must be removed before the welding surface of water, oil, rust and other impurities.
3. Arc-starting and return transportation technology or arc-starting plate should be used to strengthen arc.
4. according to the plate thickness and steel grade, using different temperature for appropriate preheating.
5. Apply short arc and narrow weld bead during welding.

Chemical composition of deposited metal (mass fraction) :

	C	Si	Mn	S	P	Ni	Mo	Cr
Requirement	0.10	0.60	≥ 1.30	0.015	0.020	≥2.00	0.60	0.60
Actual Result	0.038	0.21	1.68	0.004	0.006	2.77	0.39	0.43

Note: In order to meet the requirements of group G alloy, the undiluted weld metal s hall be at least conducive to a minimum value in this table

	Tensile strength (MPa)	Yield strength(MPa)	Elongation (%)	Impact Function (J)
GB/NB	≥780	≥690	≥ 13	≥27J/-40C
AWS	≥760	≥670	≥ 15	——
Actual Result	868	785	18.5	115

Diffused hydrogen content of molten metal: ≤4.0mL/100g(mercury method or thermal conductivity method)
Molten metal X-ray detection requirements: Grade I
Recommended parameters: (Polarity: DC)

diameter/mm		——	3.2*350	4.0*400	5.0*400
Current (A)	F/H	——	90-130	140- 170	180-220
	V/OH	——	80- 115	130- 150	——

AWS A5.28 ER110S-G

AK ER80CS

Characteristics and Applications: AK-ER80CS is an 800MPA grade gas shielded welding wire for low alloy and high strength steel. It adopts multi-element alloy strengthening method, strictly controls the content of impurities such as s and p in the welding wire, and obtains high strength, high toughness and high purity weld metal, excellent all-position welding process, beautiful weld molding. Both as-welded and as-heat-treated deposited metals have excellent low temperature ductility and crack resistance. Mainly used for welding of WSD690E high strength and high toughness penstock in pumped storage power station, it is also suitable for the thick plates such as volute and seat ring in the same strength hydraulic power generation equipment, and the WCF80, EQ70, E690, Q690E and ASTM A514GR in the marine engineering ships, oil platforms and oil pipelines. Q High-strength low-alloy steel welding.

NOTE:

1. protective gas Ar+ 20% CO2, the mixed gas, gas flow 15-20 L/min. Control arc length during welding to avoid welding defects such as blowhole.
2. When welding, it is advisable to control the length of dry extension of welding wire at 10-18mm. When the current is more than 250A, the dry elongation should be controlled in the range of 20-25mm
3. and the impurities such as rust, oil and water should be thoroughly removed from the welding place.
4. thin plate welding torch can be inclined to the side of the weld to reduce penetration to avoid penetration of the base metal.
5. When the wind speed is 1.5 m/s in outdoor construction, measures should be taken to prevent air hole and other defects.

Chemical composition of deposited metal (mass fraction) :

	C	Si	Mn	S	P	Ni	Cu	Mo	Cr
Actual Result	0.080	0.60	1.72	0.005	0.008	2.0	0.10	0.50	0.18

Mechanical properties of deposited metal:

	Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function(J)	Protective gas
Requirement	≥760	≥660	≥ 15	≥47J/-40℃	——
Actual Result	845	764	20	135	Ar+20% CO_2

Recommended parameters: (Polarity: DC)

Diameter/mm		1.0	1.2	1.6	——
Current(A)	F/H	100-240	120-280	150-350	——
	V/OH	70-160	80-180	——	——

AK ER80YM

GB/T 8110 ER76-G

AWS A5.28 ER110S-G

Characteristics and Applications: AK-ER80YM is an 800MPA grade gas shielded welding wire for low alloy and high strength steel. It adopts multi-element alloy strengthening method, strictly controls the content of impurities such as s and p in the welding wire, and obtains high strength, high toughness and high purity weld metal. Excellent all-position welding technology, beautiful weld molding. The deposited metal has excellent low temperature initial plasticity and crack resistance. It is mainly used for welding WSD690E high strength and high toughness penstock in pumped storage power station, and for welding volute, seat ring and other thick plates in 800MPa high strength hydraulic power plant.

NOTE:

1. protective gas Ar + 20% CO2, the mixed gas, gas flow 15-20 L/min. Control arc length during welding to avoid welding defects such as blowhole.
2. When welding, it is advisable to control the length of dry extension of welding wire at 10-18mm. When the current is more than 250A, the dry elongation should be controlled in the range of 20-25mm
3. and the impurities such as rust, oil and water should be thoroughly removed from the welding place.
4. thin plate welding torch can be inclined to the side of the weld to reduce penetration to avoid penetration of the base metal.
5. When the wind speed is 1.5 m/s in outdoor construction, measures should be taken to prevent air hole and other defects.

Chemical composition of welding wire (mass fraction) :

	C	Si	Mn	S	P	Ni	Cu	Mo	Cr
Actual Result	0.075	0.56	1.70	0.005	0.006	2.1	0.32	0.40	0.21

Mechanical properties of deposited metal:

	Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function(J)	Protective gas
Requirement	≥760	≥680	≥ 15	≥47J/-40℃	——
Actual Result	827	777	21	93	Ar+20% CO_2

Recommended parameters: (Polarity: DC)

Diameter/mm		1.0	1.2	1.6	——
Current (A)	F/H	100-240	120-280	150-350	——
	V/OH	70-160	80-180	——	——

AK S80A
AK AF80SD

GB/T 36034 S78A4U FB-SUN5M3 （H08Mn2Ni3Mo）
GB /T 36037 SA FB 1
AWS A5.23M F76A4-EG-G

Characteristics and applications: AK-S80A is a submerged arc welding wire for low alloy high strength steel, AK-AF80SD is a fluorine-base type sintered flux, light gray spherical particle, particle size 12 ~ 50 mesh, copper-plated wire AK-S80A and flux AK-AF80SD combination, it can obtain excellent welding process performance, DC welding, welding wire positive electrode, arc stability, beautiful shape, easy slotting slag, weld metal S, P content is low, with excellent low-temperature impact toughness and crack resistance. Mainly used for pumping energy storage, large hydropower equipment 800MPa grade high-strength steel pressure pipeline welding. It is also suitable for welding important structures of Q690E and E690 alloy steel such as ocean engineering, ships, bridges, pressure vessels, etc. .

Note:

1. before the use of flux must be 350 ° C ~ 400 ° C baking 1 ~ 2 hours, welding wire before use should be dry, oil-free, rust-free state.
2. before welding should be strictly removed welding oil, rust, moisture and other impurities.
3. Recommended welding specifications (taking φ4.0 wire as an example) i = (525 ± 50) a, U = (30 ± 2) V, welding speed V = (38 ± 2) cm/min, and inter-pass temperature (150 ± 15) ° C.
4. To ensure the plasticity of deposited metal, it is necessary to de hydrogen at 200 ~ 240 °C for 2 ~ 4 hours after welding.
5, welding materials in the storage room to keep dry, and the ground and wall to keep a certain distance. Storage should pay attention to distinguish models, specifications, can not be mixed up.

Flux Quality Requirements:

1. Flux water content 0.10% 2. Mechanical inclusions ≤0.30. 3 in flux, flux s 0.050% 4. Flux p content ≤0.060%

Deposited metal x-ray detection requirements: Grade I

Chemical composition of welding wires and deposited metals (mass fraction) :

	C	Si	Mn	S	P	Ni	Mo	Cr	Cu
Welding Wire Actual Result	0.035	0.39	1.53	0.004	0.010	2.13	0.50	0.27	0.06
Molten metal Actual Result	0.047	0.31	1.67	0.003	0.012	2.70	0.47	0.26	0.12

Mechanical properties of deposited metal:

	Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function(J)	Impact function(J)
GB/T	780-980	≥670	≥ 13	——	≥47J/-40℃
AWS	780-900	≥680	≥ 15	——	≥27J
Actual Result	840	715	19	——	130

AK J100SD

Characteristics and Applications: AK-J100SD is a high strength steel electrode with low hydrogen sodium coating. DC reverse connection can be used for all-position welding. Excellent welding process performance, low hydrogen diffusion in weld, with excellent low-temperature toughness and crack resistance. Mainly used for B950CF and the corresponding strength level of hydraulic pressure pipeline welding and installation.

Note:

1. The welding rod must be baked at 380 ° C for 1-2 hours before use, and put into 100- 150 ° C incubator,
2. welding should be thoroughly removed the surface of the weld rust, oil, moisture and other impurities.
3. After welding, 180 ° C ~ 250 ° C hydrogen elimination treatment was carried out (holding time was decided by plate thickness) .
4. Use short arc and narrow pass during welding.

Chemical composition of deposited metal (mass fraction) :

	C	Si	Mn	S	P	Ni	Mo	Cr	V
Actual Result	0.04	0.16	1.90	0.004	0.008	3.07	0.52	0.96	0.01

Mechanical properties of deposited metal

		Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function(J)
Actual Result	**Welding state**	1005	869	18.5	85J/-40℃
	Heat treatment 550℃x10h	1010	936	20	62

Diffused hydrogen content of molten metal: ≤4.0mL/100g(mercury method or thermal conductivity method)
Molten metal X-ray detection requirements: Grade I
Recommended parameters: (Polarity: DC)

Diameter/mm		2.5*300	3.2*350	4.0*400	5.0*400
Current （A）	**F/H**	70- 100	90-130	140- 170	170-210
	V/OH	60-90	80- 120	130- 150	——

AK ER100SD

Characteristics and applications: AK-ER100SD is Ni-Cr-Mo type high toughness low alloy steel gas shielded welding wire, welding process performance is good, arc stability, small spatter, beautiful weld shape, deposited metal has good mechanical properties. Suitable for B950CF and the corresponding strength of steel structure welding. Commonly used in hydropower, construction machinery, lifting machinery, ships, bridges, hydropower, pipelines and pressure vessels and other structures of the welding.

NOTE:

1. protective gas AR + 20% CO2, the mixed gas, gas flow 15-20 L/min. Control arc length during welding to avoid welding defects such as blowhole.
2. When welding, it is advisable to control the length of dry extension of welding wire at 10-18mm. When the current is more than 250A, the dry elongation should be controlled in the range of 20-25mm.
3. and the impurities such as rust, oil and water should be thoroughly removed from the welding place.

Chemical composition of deposited metal (mass fraction) :

	C	Si	Mn	S	P	Ni	Mo	Cr	Cu	Ti
Molten metal Actual Result	0.094	0.45	1.76	0.004	0.008	2.85	0.54	0.57	0.10	0.05

Mechanical properties of deposited metal

	Tensile strength (MPa)	Yield strength (MPa)	Elongation (%)	Impact function(J)	Protective gas
Actual Result	1034	980	16	60J/-40℃	Ar+20% CO_2

Radiographic testing of deposited metals-level I recommended parameters:

Diameter/mm		0.8	1.0	1.2	1.6
Current （A）	F/H	50-200	80-250	120-280	170-390
	V/OH	50-200	80-250	120-240	——

AK S100A
AK AF100SD

Characteristics and applications: AK-S100A is a submerged arc welding wire for low alloy high strength steel, AK-AF100SD is a fluorine-base type sintered flux, basic ity about 1.8. The combination of AK-S100A and AK-AF100SD has the advantages of good welding technology, stable arc, easy slag removal and good low temperature impact toughness and crack resistance of deposited metal. Suitable for B950CF high strength steel structure and pressure pipe welding, mainly used in Baosteel B950CF steel welding operations, but also used in other fields such as strength level welding operations.

Note:

1. before the use of flux must be 300 ~ 350 ° C baking 1 ~ 2 hours, welding wire should be dry before use, no oil, Rust State
2. welding should be strictly removed before the welding oil, rust, moisture and other impurities.
3. When Welding, preheat 100 ~ 200 ° C (depending on plate thickness and material) .
4. Recommended welding specification (taking Φ4.0 wire as an example) I = 500 ~ 550A, U = 28 ~ 32V, welding speed V = 30 ~ 50cm/min, inter-pass temperature 150 ~ 180 ° C.
5. After welding, it needs 200 ~ 250 ° C heat preservation for 2 ~ 4 hours to remove hydrogen.

Flux Quality Requirements:

1. Flux Water Content ≤0.10%
2. Mechanical inclusions ≤0.30.
3. Sulfur content of flux 0.050%
4. Phosphorus content ≤0.060%

Of flux deposited metal x-ray detection requirements: Grade I

Deposited metal diffusion hydrogen content: ≤ 5.0 ml/100g (mercury or thermal conductivity method)

Chemical composition of welding wires and deposited metals (mass fraction) :

	C	Si	Mn	S	P	Ni	Mo	Cr	Cu
Welding Wire Actual Result	0.064	0.30	1.64	0.006	0.005	3.15	0.52	0.49	0.18
Molten metal Actual Result	0.054	0.34	1.88	0.003	0.008	2.96	0.64	0.46	0.19

Mechanical properties of deposited metal:

	Tensile strength(MPa)	Yield strength(MPa)	Elongation (%)	Impact function(J)	Impact function(J)
Requirement	930-1130	≥790	≥ 12	——/-20℃	≥27J/-40℃
Actual Result	992	891	17	120	81