Covered Electrodes

K-11018M

For 760MPa high tensile steel

Classifications

EN 757:1997	: E 62 3 Z B 32 H10	KS D 7006	: E8016
AWS A5.5-06	: E11018-M	JIS Z 3211	: E7618-N4M2

Description

- Covering is low hydrogen, iron powder type for welding of low alloy high strength steels having tesile properties of about 740~790MPa such as HY80, etc.
- Excellent mechanical properties especially in notch toughness.
- Satisfactory bead appearance and slag removal.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	V
0.08	0.41	1.49	0.015	0.012	1.86	0.25	0.35	0.01

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -30℃	IV (J) -50℃	Remarks
AWS A5.5	680~760	min. 760	min. 20		≥ 27	
EN 757	min. 620	690~890	min. 18	≥ 47		
Example	730	830	22	80	45	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia. (mm)		2.6	3.2	4.0	5.0	6.0
Length (mm)		350	350	400	400	450
Amp. (A)	F	50~100	90~130	130~180	180~240	240~320
	V · OH	40~90	80~120	110~160	140~200	–

Approvals

ABS
E11018M-H8

* Others : JIS, CE

K-12018M

For 830MPa high tensile steel

Classifications

EN 757:1997 : E 69 3 Z B 32 H10
AWS A5.5-06 : E12018-M
JIS Z 3211 : E8318-N4C2M2

Description

- Covering is low hydrogen, iron powder type for welding of 890MPa class high tensile steel in bridge, pressure vessels, penstocks and machinery.
- Excellent mechanical properties especially in notch toughness.
- Good radiographic soundness.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	V
0.08	0.30	1.46	0.014	0.013	1.86	0.95	0.41	0.01

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -30℃	IV (J) -50℃	Remarks
AWS A5.5	745~830	min. 830	min. 18		≥ 27	
EN 757	min. 690	760~960	min. 17	≥ 47		
Example	800	940	20	70	40	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	2.6	3.2	4.0	5.0	6.0
Length	(mm)	350	350	400	400	450
Amp.	F	70~100	90~130	150~190	180~230	220~300
(A)	V · OH	60~90	70~100	120~160	140~180	–

Approvals

JIS, CE

K-308LT

Austenitic Stainless welding wire (Low C, 18%Cr-8%Ni)

Classifications

EN ISO 17633-A:2008	: T 19 9 L P C(M) 1	KS D 3612	: YF-308LC
EN ISO 17633-B:2008	: TS308L-FB1	JIS Z 3323	: TS308L-FB1
AWS A5.22-15	: E308LT1-1/4		

Description

- K-308LT is designed for MAG welding of low carbon 18%Cr-8%Ni stainless steel and used to joint austenitic stainless steel (AISI 304, 304L, 304LN, ASTM A157 Gr. C9; A320 Gr. B8C or D)
- The weld metal contains optimum ferrite contents in their austenitic structures, Therefore their weldability is excellent with lower crack susceptibility.
- It has easy slag removal, low spatter generation and good weld soundness of weld-metal.

Welding positions



Polarity & shielding gas

- CO_2: 100% CO_2 (15~25ℓ/min)
  Mix: Ar+20% CO_2 (15~25ℓ/min)
- DCEP (DC+)

Typical chemical composition of all-weld metal (%)

Shielding gas	C	Si	Mn	Cr	Ni	FN
CO_2	0.03	0.60	1.15	20.30	10.50	3~8 & 8~12
Mix	0.03	0.65	1.25	20.40	10.50	

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -40℃	Remarks
AWS A5.22		min. 520	min. 35		
EN ISO 17633-B		min. 520	min. 30		
Example	440	570	39	65	CO_2
	450	580	38	63	Mix

Notes on usage and welding condition

- Refer to page 303 for more information on usage
- When heat input is excessive, base metal will be bended or distorted due to the bad heat conductivity. Therefore, perform welding with selecting proper heat input

Package

Dia. (mm)	0.9	1.2	1.6
Spool (kg)	5, 12.5, 15		

Approvals

Shielding gas	ABS	BV	DNV	LR	NK	KR	CCS
CO_2	E308LT1-1	UP	308L	BF 304L S CHE	KW 308LG(C)	RW 308LG(C)	304L

Flux Cored Welding Wire

K-309MoLT

Austenitic Stainless welding wire (Dissimilar joints)

Classifications

EN ISO 17633-A:2010 : T 23 12 2 L P C1 1
EN ISO 17633-B:2010 : TS 309LMo-F C1 1
AWS A5.22-2012 : E309LMoT1-1
KS D 3612-2016 : YF-309MoLC
JIS Z 3323-2007 : TS309LMo-FC1

Description

- Dissimilar joint welds ; of and between high-strength, mild steels and low-alloyed QT-steels, stainless, ferritic Cr- and austenitic Cr-Ni-steels, manganese steels.
- Cladding ; for the first layer of corrosion resistant weld claddings on ferritic-perlitic steels in boiler and pressure vessel parts up to fine-grained steel S500N.
- Wire is a titania type of flux cored wire for all-position welding and for Mo-alloyed claddings the product is necessary for the 1st layer.
- Weld metals contain comparatively much more ferrite in their austenitic, therefore they provide better weldability together with superior heat resistance, and corrosion resistance.

Welding positions



Polarity & shielding gas

- CO_2: 100% CO_2 (15~25ℓ/min)
- DCEP (DC+)

Typical chemical composition of all-weld metal (%)

Shielding gas	C	Si	Mn	Cr	Ni	Mo	FN
CO_2	0.03	0.60	1.00	23.75	14.60	2.50	18.0

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -30℃	Remarks
AWS A5.22		min. 520	min. 25		
EN ISO 17633-B	min. 350	min. 550	min. 25		
Example	480	700	30	35	CO_2

Notes on usage and welding condition

- Refer to page 313 for more information on usage
- When heat input is excessive, base metal will be bended or distorted due to the bad heat conductivity. Therefore, perform welding with selecting proper heat input

Package

Dia. (mm)	1.2	1.6
Spool (kg)	5, 12.5, 15	

Approvals

ABS, KR, JIS

* Please refer to our homepage(www.kiswel.com) for further detailed information regarding approvals.

K-505-15

AWS E505-15
JIS DT2616
KS DT2616

FOR HEAT-RESISTING STEEL

Typical applications

Welding of super-heater tubes of high temperature and high pressure boilers, heater tubes of oil refining equipments.

Coating

Low hydrogen type.

Characteristics on Usage

① Preheat at 250~400℃ and postheat treat at 730~780℃ because of high self-hardening property of the deposited weld metal.
② Redry the electrode at 300~350℃ for 60 minutes prior to use.

Typical chemical composition of all-weld-metal (%)

C	Si	Mn	Cr	Mo
0.08	0.45	0.88	8.86	0.90

Typical mechanical properties of all-weld-metal

Y · P N/mm²{kgf/mm²}	T · S N/mm²{kgf/mm²}	El (%)	PWHT
470 {48}	540 {55}	33	850℃×1hr. S·R

Sizes available and recommended currents (DC ⊕)

Dia.	(mm)	2.6	3.2	4.0	5.0	6.0
Length	(mm)	350	350	400	400	450
Amp.	F	60~90	80~120	120~160	160~220	210~260
	V&OH	50~60	70~110	90~150	–	–

Welding positions



Approved by

Covered Electrodes

K-7018

For 490MPa high tensile steel

Classifications

EN ISO 2560-A:2006	: E 42 3 B 32 H10	KS D 7006	: E5016
EN ISO 2560-B:2006	: E 49 18 A U H10	JIS Z 3211	: E4918
AWS A5.1-04	: E7018		

Description

- Covering is low hydrogen, iron powder type for welding of 490MPa class high tensile steel in ships, bridges, storage tank, building and industrial machinery.
- Excellent mechanical properties and radiographic soundness.
- Satisfactory bead appearance and slag removal.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn*	P	S	Ni*	Cr*	Mo*	V*	*Sum
0.07	0.61	0.87	0.015	0.011	0.02	0.03	0.01	0.01	0.94

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -20℃	IV (J) -30℃	Remarks
AWS A5.1	min. 400	min. 490	min. 22		≥ 27	
EN ISO 2560-A	min. 420	500~640	min. 20		≥ 47	
Example	480	570	30	100	70	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	2.6	3.2	4.0	5.0	6.0
Length	(mm)	350	350	400	400	450
Amp. (A)	F	60~100	90~130	130~180	200~250	250~310
	V · OH	50~80	80~120	110~170	160~210	–

Approvals

ABS	BV	DNV	GL	KR	LR	NK
3YH10,E7018	3YHH	3YH10	3YH10	3YH15	3YmH15	KMW53H

* Others : KS, JIS, CWB, CE

Covered Electrodes

K-7018C3L

For low temperature service steel (490MPa)

Classifications

EN ISO 2560-A:2006	: E 42 3 1Ni B 32 H5	JIS Z 3211	: E4918-N2 H5
EN ISO 2560-B:2006	: E 49 18-N2 A H5		
AWS A5.5-06	: E7018-C3L H4R		

Description

- Covering is low hydrogen, iron powder type for welding of 1%Ni steel and aluminium-killed steel used at low temperature, LPG tanks, etc.
- Fast, efficient metal transfer in all positions and very low hydrogen content. (HD ≤4ml/100g)
- Excellent notch toughness of the deposited weld metal at low temperature.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	V
0.05	0.31	0.86	0.016	0.016	1.01	0.05	0.02	0.01

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -30℃	IV (J) -50℃	Remarks
AWS A5.5	min. 390	min. 490	min. 22		≥ 27	
EN ISO 2560-A	min. 420	500~640	min. 20	≥ 47		
Example	530	620	34	90	50	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia. (mm)	2.6	3.2	4.0	5.0
Length (mm)	350	350	400	400
Amp. F	60~90	90~140	150~190	180~230
(A) V · OH	50~80	80~120	120~160	–

Approvals

CE

K-7018G

For low temperature service steel (490MPa)

Classifications

EN ISO 2560-A:2006	: E 42 5 1Ni B 32 H5	JIS Z 3211	: E4918-G H5
EN ISO 2560-B:2006	: E 49 18-G A H5		
AWS A5.5-06	: E7018-G H4R		

Description

- Covering is low hydrogen, iron powder type for welding of 1%Ni steel and aluminium-killed steel used at low temperature, LPG tanks, etc.
- Fast, efficient metal transfer in all positions and very low hydrogen contens. (HD ≤4ml/100g)
- Excellent notch toughness of the deposited weld metal at low temperature.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	V
0.04	0.24	0.91	0.016	0.016	1.01	0.05	0.02	0.01

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -30℃	IV (J) -50℃	Remarks
AWS A5.5	min. 390	min. 490	min. 22			
EN ISO 2560-A	min. 420	500~640	min. 20		≥ 47	
Example	520	600	34	100	70	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia. (mm)	2.6	3.2	4.0	5.0
Length (mm)	350	350	400	400
Amp. (A) F	60~90	90~140	150~190	180~230
V · OH	50~80	80~120	120~160	–

K-7018N

For 490MPa high tensile steel

Classifications

EN ISO 2560-A:2006	: E 42 4 B 32 H10	JIS Z 3214	: E4918-1
EN ISO 2560-B:2006	: E 49 18-1 A U H10		
AWS A5.1-04	: E7018-1		

Description

- Covering is low hydrogen, iron powder type for welding of nuclear reactor vessels, LPG tankers, LPG storage tanks and similar installations at low temperature.
- Good impact value at -45℃
- Excellent mechanical properties and radiographic soundness.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn*	P	S	Ni*	Cr*	Mo*	V*	*Sum
0.07	0.58	1.38	0.013	0.012	0.15	0.03	0.01	0.01	1.58

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -30℃	IV (J) -45℃	Remarks
AWS A5.1	min. 400	min. 490	min. 22		≥ 27	
EN ISO 2560-A	min. 420	500~640	min. 20	≥ 47		
Example	510	590	32	100	75	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia. (mm)		2.6	3.2	4.0	5.0	6.0
Length (mm)		350	350	400	400	450
Amp. (A)	F	70~100	90~130	150~190	160~220	180~230
	V · OH	60~90	85~120	110~160	130~180	–

Approvals

DNV	LR
5YH10	5Y40mH15

* Others : JIS, CWB, CE

Covered Electrodes

K-7018NP

For 490MPa high tensile steel

Classifications

EN ISO 2560-A:2006	: E 42 4 B 42 H5	JIS Z 3211	: E4918-1 H5
EN ISO 2560-B:2006	: E 49 18-1 A U H5		
AWS A5.1-04	: E7018-1 H4R		

Description

- Covering is low hydrogen, iron powder type for welding of nuclear reactor vessels, LPG tankers, LPG storage tanks and similar installations at low temperature.
- Good impact value at -45℃
- Excellent mechanical properties and radiographic soundness.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn*	P	S	Ni*	Cr*	Mo*	V*	*Sum
0.05	0.45	1.18	0.013	0.012	0.25	0.03	0.01	0.02	1.49

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -30℃	IV (J) -45℃	Remarks
AWS A5.5	min. 400	min. 490	min. 22		≥ 27	
EN ISO 2560-A	min. 420	500~640	min. 20	≥ 47		
Example	510	570	32	110	75	AW

* AW : As-Welded

Sizes available and recommended currents (DC +)

Dia.	(mm)	2.6	3.2	4.0	5.0	6.0
Length	(mm)	350	350	400	400	450
Amp.	F	70~100	90~130	150~190	160~220	180~230
(A)	V · OH	60~90	85~120	110~160	130~180	–

Approvals

ABS	BV	DNV	GL	LR
3YH4R	3YH5	3YH5	3YH5	3YH15

Covered Electrodes

K-8018

For 560MPa high tensile steel

Classifications

EN ISO 2560-A:2006	: E 46 3 B 32 H10	KS D 7006	: E5316
EN ISO 2560-B:2006	: E 55 18-G A H10	JIS Z 3211	: E5518-G
AWS A5.5-06	: E8018-G		

Description

- Covering is low hydrogen, iron powder type for welding of 560MPa class high tensile steel in ships, bridges, penstocks and rails.
- Excellent mechanical properties and radiographic soundness.
- Satisfactory bead appearance and slag removal.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	V
0.06	0.56	1.32	0.018	0.011	0.35	0.03	0.25	0.01

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -20℃	IV (J) -30℃	Remarks
AWS A5.5	min. 460	min. 550	min. 19			
EN ISO 2560-A	min. 460	530~680	min. 20		≥ 47	
Example	490	590	28	95	80	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia. (mm)		2.6	3.2	4.0	5.0	6.0
Length (mm)		350	350	400	400	450
Amp. (A)	F	60~90	90~130	140~190	180~230	250~310
	V · OH	50~80	80~110	120~170	160~200	–

Approvals

ABS

3Y

* Others : JIS, CE

Covered Electrodes

K-8018B2

For heat-resisting steel (1.25%Cr-0.5%Mo)

Classifications

EN ISO 3580-A:2008	: E CrMo1 B 32 H10	KS D 7022	: DT2318
EN ISO 3580-B:2008	: E 55 18-1CM H10	JIS Z 3223	: DT2318
AWS A5.5-06	: E8018-B2		

Description

- Covering is low hydrogen, iron powder type for welding of 1.25%Cr-0.5%Mo steel used for steam pipes of boilers, oil refining industries, pressure vessels for high temperature service.
- Preheat at 150~300℃ and postheat treat at 680~730℃
- High deposition rate in all positions.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	V
0.06	0.61	0.70	0.014	0.011	0.02	1.32	0.55	0.01

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) 20℃	IV (J) 0℃	Remarks
AWS A5.5	min. 460	min. 550	min. 19			
EN ISO 3580-A	min. 355	min. 510	min. 22	≥ 47		
Example	590	670	25	80	65	PWHT

* PWHT : 690℃x1Hr

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	2.6	3.2	4.0	5.0	6.0
Length	(mm)	350	350	400	400	450
Amp. (A)	F	65~95	90~130	130~190	190~250	250~300
	V · OH	60~90	80~120	110~170	–	–

Approvals

ABS	DNV	LR
3YH10, E8018-B2	3YH10	3YmH15

* Others : CE

K-8018C3

For low temperature service steel (560MPa)

Classifications

EN ISO 2560-A:2006	: E 46 4 1Ni B 32 H10	JIS Z 3211	: E5518-N2 U
EN ISO 2560-B:2006	: E 55 18-N2 A U H10		
AWS A5.5-06	: E8018-C3		

Description

- Covering is low hydrogen, iron powder type for welding of 1%Ni steel and high tensile strength steel for military and commercial applications where good impact property.
- Fast, efficient metal transfer in all positions.
- Excellent deposited weld metal with both AC and DC power source.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	V
0.07	0.45	0.91	0.013	0.012	1.03	0.02	0.01	0.01

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -30℃	IV (J) -40℃	Remarks
AWS A5.5	470~550	min. 550	min. 24		≥ 27	
EN ISO 2560-B	min. 460	530~680	min. 20		≥ 47	
Example	530	600	28	100	60	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	2.6	3.2	4.0	5.0
Length	(mm)	350	350	400	400
Amp. (A)	F	60~95	90~130	135~180	190~240
	V · OH	60~90	80~120	110~170	–

Approvals

ABS	LR
3YH10,E8018-C3	3YmH15

* Others : CE

KC-28

For mild steel and 490MPa tensile strength steel

Classifications

EN ISO 14341-A:2008	: G 42 2 C G3Si1	AWS A5.18-05	: ER70S-6
	: G 42 3 M G3Si1	KS D 7025	: YGW12
EN ISO 14341-B:2008	: G 49A 3 C G6	JIS Z 3312	: YGW12
	: G 49A 3 M G6		

Description

- For butt and fillet welding of ship-building, bridges, structural steel, steel buildings, machineries and vehicles
- Served as both carbon dioxide and mixture gas, and stable arc performance in almost welding current
- A wide range of use due to low spatter and all welding position
- Suited for application of sheet metal on high welding current without burn through

Typical chemical composition of wire (%)

C	Si	Mn	P	S
0.07	0.86	1.53	0.012	0.007

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -30℃	Remarks
AWS A5.18	min. 400	min. 480	min. 22	≥ 27	CO_2
EN ISO 14341-A	min. 420	500~640	min. 20	≥ 47	CO_2
Example	450	550	30	70	CO_2
	480	580	28	80	Mix

Operating data

Dia.(mm)		1.2	1.4
Current (Amp.)	Flat (PA/1G)	100 ~ 350	140 ~ 400
	Vertical (PF/3G)	50 ~ 180	100 ~ 250
	Overhead (PE/4G)	50 ~ 180	100 ~ 250

Polarity and Shielding gas

- DCEP (DC+)
- CO_2 : 100% CO_2
  Mix : Ar+20% CO_2 (15~25ℓ /min.)

Approvals

Shielding gas	ABS	BV	DNV	GL	LR	KR	NK
CO_2	3SA	SA3YM	Ⅲ YMS	3YS	3YS H15	3YSG	KSW53G
Mix	3YSA	–	–	–	–	–	–

* Others : CCS, RS, CWB, KS, JIS

KCL-10

For 420MPa mild steel

Classifications

EN ISO 2560-A:2006	: E 38 0 C 22	KS D 7004	: E4311
EN ISO 2560-B:2006	: E 43 10 A	JIS Z 3211	: E4310
AWS A5.1-04	: E6010		

Description

- Covering is high cellulose type for welding of pipe, shipbuildings, tanks or galvanized surfaces and steel casting repairs.
- Good penetration combined with freedom from lack of fusion makes this electrode an excellent choice for pipe welding.
- Gives high ductility root weld and easy slag removal.
- Redry the electrode at 70~80℃ for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	V
0.11	0.36	0.63	0.015	0.013	0.02	0.03	0.01	0.01

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) 0℃	IV (J) -30℃	Remarks
AWS A5.1	min. 330	min. 430	min. 22		≥ 27	
EN ISO 2560-A	min. 380	470~600	min. 20	≥ 47		
Example	420	500	29	60	40	AW

* AW : As-Welded

Sizes available and recommended currents (DC +)

Dia.	(mm)	2.6	3.2	4.0	5.0
Length	(mm)	350	350	350	350
Amp. (A)	F	50~80	70~110	110~150	160~200
	V · OH	40~70	60~100	90~130	140~170

Approvals

ABS	BV	GL	LR	NK
3,E6010	3	3	3m	KMW3

* Others : JIS, CE

Covered Electrodes

KFN-50

For cast iron

Classifications

EN ISO 1071:2003	: E C NiFe-Cl 1	KS D 7008	: DFCNiFe
AWS A 5.15-90	: ENiFe-Cl	JIS Z 3252	: DFCNiFe

Description

- Covering is graphite type for joining of spheroidal graphit cast iron or repairing of cast iron products such as cylinder covers, motor beds, casings and gears.
- Good crack resistance and mechanical properties.
- Preheat at 150~300℃. The temperature to be applied varies in accordance with kind, shape and size of base metal.
- Redry the electrode at 70~120℃ for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cu	Fe	Al
0.80	0.36	0.45	0.008	0.002	55.5	0.05	Rem.	0.05

Typical mechanical properties of all-weld metal

T.S	Hardness		
(MPa)	HV	HB	HS
550	180~210	171~200	26~30

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	2.6	3.2	4.0	5.0
Length	(mm)	300	350	350	550
Amp. (A)	F	60~90	80~120	120~150	140~190

Approvals

CE

Covered Electrodes

KK-50LF

For 490MPa high tensile steel

Classifications

EN ISO 2560-A:2006	: E 42 3 B 12 H10	KS D 7006	: E5016
EN ISO 2560-B:2006	: E 49 16 A U H10	JIS Z 3211	: E4916
AWS A5.1-04	: E7016		

Description

- Covering is low hydrogen type for welding of 490MPa class high tensile steel in ships, bridges.
- Excellent mechanical properties and radiographic soundness.
- Excellent crack resistance even in the welding of difficult to weld steels.
- Satisfactory bead appearance and slag removal.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn*	P	S	Ni*	Cr*	Mo*	V*	*Sum
0.07	0.53	0.93	0.013	0.012	0.02	0.03	0.01	0.01	1.00

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -20℃	IV (J) -30℃	Remarks
AWS A5.1	min. 400	min. 490	min. 22		≥ 27	
EN ISO 2560-A	min. 420	500~640	min. 20		≥ 47	
Example	480	560	32	110	80	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia. (mm)		2.6	3.2	4.0	5.0	6.0
Length (mm)		350	350	400	400	450
Amp. (A)	F	60~90	90~130	140~190	180~240	250~310
	V · OH	50~80	80~110	120~160	160~200	–

Approvals

ABS	BV	DNV	GL	KR	LR	NK
3YH10	3YHH	3YH10	3YH10	3YH15	3YmH15	KMW53H

* Others : KS, JIS, CE

KM-1000

For hardfacing (Hv 800)

Classifications

KS D 7035 : DFWA-700-S
JIS Z 3251 : DFWA-700-S

Description

- Hardfacing of cutter knives, shovel teeth, cutter for coal, concrete cutters and earth drills.
- The deposited weld metal is harder than other kinds of deposited weld metal.
- Extremely excellent heavy soil abrasion resistance.
- The deposited weld metal has tungsten carbide alloy.
- Machining is impossible.
- Preheat at 300℃ and high over.
- Postheat treat at about 600℃ immediately after welding.
- Redry the electrode at 70~120℃ for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	W
2.98	0.60	1.88	0.022	0.014	0.04	0.02	0.01	48.0

Typical mechanical properties of all-weld metal

Conditions	As welded Interpass temp. max. 350℃
HV	820
HRC	64.7
HS	90

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	3.2	4.0	5.0
Length	(mm)	350	400	400
Amp. (A)	F	90~130	120~180	170~230

Covered Electrodes

KM-300

For hardfacing (Hv 300)

Classifications

EN 14700:2005 : E Fe 1
KS D 7035 : DF2A-300-B
JIS Z 3251 : DF2A-300-B

Description

- Covering is low hydrogen type for hardfacing of shafts, roller, spindle, crane wheel, etc.
- Good usability.
- High abrasion resistance and impact resistance.
- Good machinable the deposited weld metal.
- Preheat at 150℃ only for multilayer welding of low alloy steell and high carbon steel.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	W
0.20	0.60	1.48	0.018	0.011	0.02	0.70	0.01	0.01

Typical mechanical properties of all-weld metal

Conditions	As welded	Heat treated	
	Interpass temp. 150℃	900℃ oil quenching	650℃ stress relief
HV	308	408	280
HRC	30.8	41.6	27.1
HS	43	56	40

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	3.2	4.0	5.0	6.0
Length	(mm)	350	400	400	450
Amp. (A)	F	80~130	140~180	170~240	240~300

Covered Electrodes

KM-650

For Cement industry

Classifications

DIN 8555 : E10-UM-60

Description

- Hardfacing of cutter knives, shovel teeth, cutter for coal, concrete cutters and earth drills.
- The deposited weld metal is harder than other kinds of deposited weld metal.
- Extremely excellent heavy soil abrasion resistance.
- The deposited weld metal has Cr-carbide alloy.
- Machining is impossible.
- Preheat at 200℃ and high over.
- Postheat treat at about 600℃ immediately after welding.
- Redry the electrode at 70~120℃ for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Cr	Ni	Mo
3.10	0.89	1.90	0.013	0.002	30.55	0.01	0.01

Typical mechanical properties of all-weld metal

Conditions	As welded	
	Interpass temp. 150℃	Interpass temp. 200℃
HV	735	790
HRC	61.7	63.5

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	3.2	4.0	5.0
Length	(mm)	350	400	400
Amp. (A)	F	120~150	160~200	220~260

Covered Electrodes

KM-800

For hardfacing (Hv 700)

Classifications

KS D 7035 : DF3C-700-B
JIS Z 3251 : DF3C-700-B

Description

- Covering is low hydrogen type for hardfacing of impellers, pump casings.
- The deposited weld metal has an extremely hard martensite structure.
- Machining is impossible as welded.
- Preheat at 200℃ and over.
- Postheat treat at about 600℃ immediately after welding.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	W
0.47	1.45	1.51	0.017	0.012	0.03	4.10	0.02	0.01

Typical mechanical properties of all-weld metal

Conditions	As welded		Heat treated
	Interpass temp. 150℃	Interpass temp. 200℃	600℃ stress relief
HV	723	810	535
HRC	61.1	64.4	51.4
HS	83	89	69

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	3.2	4.0	5.0	6.0
Length	(mm)	350	400	400	450
Amp. (A)	F	90~130	140~170	190~240	220~300

KM-800D

For Cement industry

Classifications

DIN 8555 : E6-UM-60

Description

- Covering is low hydrogen type for hardfacing of impellers, pump casings.
- The deposited weld metal has an extremely hard martensite structure.
- Machining is impossible as welded.
- Preheat at 200℃ and over.
- Postheat treat at about 600℃ immediately after welding.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Cr	Ni	Mo
0.56	1.93	0.36	0.011	0.004	10.32	0.05	0.02

Typical mechanical properties of all-weld metal

Conditions	As welded	
	Interpass temp. 150℃	Interpass temp. 200℃
HV	702	760
HRC	60.2	62.8

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	3.2	4.0	5.0
Length	(mm)	350	400	400
Amp. (A)	F	90~130	140~170	190~240

KM-900

For hardfacing (Hv 700)

Classifications

KS D 7035 : DFMA-250-B
JIS Z 3251 : DFMA-250-B

Description

- Covering is high titania type for hardfacing of crushers, high manganese rails, buckets, bulldozer parts and build-upof parts subject to serene impact and abrasion.
- The deposited weld metal has austenite structure.
- Extremely ductile deposited weld metal.
- When the base metal of 13% Mn steel is hardened, cut off the hardened zone before welding.
- Redry the electrode at 300~400℃ for 1~2 hours prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	W
0.52	0.30	12.10	0.018	0.012	0.02	0.10	0.20	0.01

Typical mechanical properties of all-weld metal

Conditions	As welded Interpass temp. 150℃	Work hardenability
HV	225	510
HRC	16.9	49.8
HS	33	66.5

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	3.2	4.0	5.0	6.0
Length	(mm)	350	400	400	450
Amp. (A)	F	90~130	140~180	190~240	220~300

KST-307-15

For stainless steel (19%Cr-9%Ni-5%Mn)

Classifications

AWS A5.4-06 : E307-15
KS D 7014 : E307-15
JIS Z 3221 : ES307-15

Description

- Welding of dissimilar steel such as austenitic manganese steel to carbon steel forgings. Joining work-hardenable steels, armour plate, austenitic manganese steels, and heat-resisting steels for temperatures up to 350℃ and dissimilar metals. Hardfacing of hot working tools, stainless valve steels and carbon steel items that must possess abrasion resistance in cold working.
- Redry the electrode at 250~350℃ for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	Cu
0.06	0.76	4.68	0.028	0.012	9.30	18.50	0.60	0.30

Typical mechanical properties of all-weld metal

	Y.S (0.2%OS) (MPa)	T.S (MPa)	El. (%)	Remarks
AWS A5.4		min. 590	min. 30	
JIS Z 3221		min. 590	min. 25	
Example	470	650	48	AW

* AW : As-Welded

Sizes available and recommended currents (DC +)

Dia.	(mm)	2.6	3.2	4.0	5.0
Length	(mm)	300	350	350	350
Amp. (A)	F	55~80	80~120	100~150	140~180
	V · OH	45~60	70~90	90~130	–

Covered Electrodes

KST-308L

For stainless steel (Low C, 18%Cr-8%Ni)

Classifications

EN IOS 3581-A:2012	: E 19 9 L R 12	KS D 7014	: E308L-16
EN IOS 3581-A:2012	: ES308L-16	JIS Z 3221	: ES308L-16
AWS A5.4-06	: E308L-16		

Description

- Covering is lime titania type for welding of 18%Cr-8%Ni stainless steel. (AISI 301, 302, 304, 308)
- Excellent welding dfficicncy because of high deposition rate.
- Remove water, rust, oil and all foreign matters from the groove prior to welding.
- Preheating is not necessary in general.
- Redry the electrode at 250~350°C for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	Cu	FN
0.03	0.73	0.65	0.028	0.012	10.07	18.86	0.21	0.30	5.3

* FN : WRC 1992

Typical mechanical properties of all-weld metal

	Y.S (0.2%OS) (MPa)	T.S (MPa)	El. (%)	IV (J) -20℃	IV (J) -196℃	Remarks
AWS A5.4		min. 520	min. 35			
EN ISO 3581-A	min. 320	min. 510	min. 30			
Example	430	600	44	65	25	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	2.0	2.6	3.2	4.0	5.0
Length	(mm)	250	300	350	350	350
Amp.	F	40~50	55~80	90~130	110~150	140~180
(A)	V · OH	35~45	40~60	70~90	90~130	-

Approvals

ABS	BV	GL	LR
E308L-16	UP	4306	304Lm

* Others : CWB, TUV, CE

Covered Electrodes

KST-308L-15

For stainless steel (Low C, 18%Cr-8%Ni)

Classifications

EN ISO 3581-A:2012	: E 19 9 L B 22	KS D 7014	: E308L-15
EN ISO 3581-B:2012	: ES308L-15	JIS Z 3221	: ES308L-15
AWS A5.4-06	: E308L-15		

Description

- Covering is lime type for welding of 18%Cr-8%Ni stainless steel. (AISI 301, 302, 304, 308)
- Excellent welding dfficicncy because of high deposition rate.
- Remove water, rust, oil and all foreign matters from the groove prior to welding.
- Preheating is not necessary in general.
- Redry the electrode at 250~350℃ for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	Cu	FN
0.03	0.41	1.67	0.022	0.015	9.71	20.02	0.21	0.3	10.7

* FN : WRC 1992

Typical mechanical properties of all-weld metal

	Y.S (0.2%OS) (MPa)	T.S (MPa)	El. (%)	IV (J) -20℃	IV (J) -196℃	Remarks
AWS A5.4		min. 520	min. 35			
EN ISO 3581-A	min. 320	min. 510	min. 30			
Example	430	590	44	65	25	AW

* AW : As-Welded

Sizes available and recommended currents (DC +)

Dia.	(mm)	2.0	2.6	3.2	4.0	5.0
Length	(mm)	250	300	350	350	350
Amp. (A)	F	40~50	55~80	90~130	110~150	140~180
	V · OH	35~45	40~60	70~90	90~130	–

Approvals

CE

KST-309L

For stainless steel (Dissimilar joint welding)

Classifications

EN ISO 3581-A:2012	: E 23 12 L R 12	KS D 7014	: E309L-16
EN ISO 3581-B:2012	: ES309L-16	JIS Z 3221	: ES309L-16
AWS A5.4-06	: E309L-16		

Description

- Covering is lime titania type for welding of 22%Cr-12%Ni stainless steel and heat-resisting castings, clad side of type 304 clad steels. Welding of dissimilar steels such as Cr-Mo steel or carbon steel to stainless steel.
- As its deposited weld metal has austenitic structure, with suitable ferrite, crack resistance is good and intergranular corrosion resistance is superior to that of E309 type.
- Redry the electrode at 250~350℃ for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	Cu	FN
0.03	0.84	0.76	0.027	0.013	12.97	23.04	0.08	0.09	11.1

* FN : WRC 1992

Typical mechanical properties of all-weld metal

	Y.S (0.2%OS) (MPa)	T.S (MPa)	El. (%)	Remarks
AWS A5.4		min. 520	min. 30	
EN ISO 3581-A	min. 320	min. 510	min. 25	
Example	480	600	40	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia. (mm)	2.0	2.6	3.2	4.0	5.0
Length (mm)	250	300	350	350	350
Amp. F	30~50	50~80	80~110	110~150	140~180
(A) V · OH	25~45	45~60	70~90	90~130	

Approvals

ABS
E309L-16

* Others : CWB, CE

KST-309LMo

For stainless steel (18%Cr-8%Ni)

Classifications

EN ISO 3581-A:2012	: E 23 12 2 L R 12	KS D 7014	: E309MoL-16
EN ISO 3581-B:2012	: ES309LMo-16	JIS Z 3221	: ES309LMo-16
AWS A5.4-06	: E309LMo-16		

Description

- Build-up welding of AISI(SUS)316 clad steel or dissimilar steels.
- Excellent crack resistance especially in the welding of dissimilar steels such as stainless steel to carbon steel.
- Redry the electrode at 250~350℃ for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	Cu
0.03	0.76	1.78	0.026	0.013	13.02	22.84	2.15	0.12

Typical mechanical properties of all-weld metal

	Y.S (0.2%OS) (MPa)	T.S (MPa)	El. (%)	Remarks
AWS A5.4		min. 520	min. 30	
EN ISO 3581-A	min. 350	min. 550	min. 25	
Example	490	650	35	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	2.0	2.6	3.2	4.0	5.0
Length	(mm)	250	300	350	350	350
Amp.	F	30~55	55~80	90~120	100~140	140~180
(A)	V · OH	25~45	45~60	70~90	90~130	–

Approvals

KR
RD309MoL

* Others : CE

Covered Electrodes

KST-310

For stainless steel (25%Cr-20%Ni)

Classifications

EN ISO 3581-A:2012	: E 25 20 R 12	KS D 7014	: E310-16
EN ISO 3581-A:2012	: ES310-16	JIS Z 3221	: ES310-16
AWS A5.4-06	: E310-16		

Description

- Covering is lime titania type for welding of AISI(SUS) 310S, SCS 18 and clad side of 18%Cr-8%Ni stainless clad steel.
- The deposited weld metal has perfect austenitic structure.
- Good mechanical property and heat resistance of the depodited weld metal.
- Redry the electrode at 250~350℃ for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	Cu
0.11	0.40	1.86	0.025	0.013	20.82	25.59	0.12	0.09

Typical mechanical properties of all-weld metal

	Y.S (0.2%OS) (MPa)	T.S (MPa)	El. (%)	Remarks
AWS A5.4		min. 550	min. 30	
EN ISO 3581-A	min. 350	min. 550	min. 20	
Example	490	620	40	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	2.0	2.6	3.2	4.0	5.0
Length	(mm)	250	300	350	350	350
Amp.	F	30~50	50~80	80~110	110~140	140~180
(A)	V · OH	25~45	45~60	70~90	90~130	–

Approvals

CWB, CE

KST-316L

For stainless steel (Low C, 18%Cr-12%Ni-Mo)

Classifications

EN ISO 3581-A:2012	: E 19 12 3 L R 12	KS D 7014	: E316L-16
EN ISO 3581-B:2012	: ES316L-16	JIS Z 3221	: ES316L-16
AWS A5.4-06	: E316L-16		

Description

- Covering is lime titania type for welding of 18%Cr-12%Ni-Mo stainless steel. (AISI 316) or dissimilar steels.
- Especially suitable for flat and horizontal fillet welding.
- Excellent corrosion resistance against sulphurous acid, phosphoric acid and acetic acid.
- Redry the electrode at 250~350℃ for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	Cu	FN
0.03	0.75	0.80	0.028	0.011	11.71	17.95	2.60	0.12	5.7

* FN : WRC 1992

Typical mechanical properties of all-weld metal

	Y.S(0.2%OS) (MPa)	T.S (MPa)	El. (%)	IV (J) -20℃	IV (J) -196℃	Remarks
AWS A5.4		min. 490	min. 30			
EN ISO 3581-A	min. 320	min. 510	min. 25			
Example	390	570	43	75	40(0.47)	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia. (mm)	2.0	2.6	3.2	4.0	5.0
Length (mm)	250	300	350	350	350
Amp. F	40~50	55~70	80~110	120~150	140~180
(A) V · OH	35~45	45~60	70~90	90~130	–

Approvals

ABS	BV	DNV	GL	KR	LR
E316L-16	UP	316L	4435	RD316L	316Lm

* Others : CWB, TUV, CE

KST-318

For stainless steel (18%Cr-12%Ni-2%Mo-Nb)

Classifications

AWS A5.4-06 : E318-16
KS D 7014 : E318-16
JIS Z 3221 : ES318-16

Description

- Covering is lime titania type for welding of AISI 318, 316, 316L stainless steel.
- The deposited weld metal is highly resistant to pitting and general type of corrosion.
- Insensitive to intergranular corrosion because of Nb.
- Redry the electrode at 250~350℃ for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	Nb
0.05	0.76	1.32	0.022	0.008	11.90	18.43	2.35	0.69

Typical mechanical properties of all-weld metal

	Y.S (0.2%OS) (MPa)	T.S (MPa)	El. (%)	Remarks
AWS A5.4		min. 550	min. 25	
JIS Z 3221		min. 550	min. 20	
Example	500	630	38	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	2.0	2.6	3.2	4.0	5.0
Length	(mm)	250	300	350	350	350
Amp.	F	40~60	50~80	80~110	120~150	140~180
(A)	V · OH	35~45	45~60	60~90	90~130	–

KST-347

For stainless steel (18%Cr-8%Ni-Nb)

Classifications

EN ISO 3581-A:2012	: E 19 9 Nb B 12	KS D 7014	: E347-16
EN ISO 3581-B:2012	: ES347-16	JIS Z 3221	: ES347-16
AWS A5.4-06	: E347-16		

Description

- Covering is lime titania type for welding of AISI 304L, 321, 347 stainless steel and the place where heat treatment after welding is impossible.
- Excellent intergranular corrosion resistance.
- Redry the electrode at 250~350℃ for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	Cu	FN
0.03	0.49	1.94	0.026	0.004	9.83	19.16	0.48	0.10	7.3

* FN : WRC 1992

Typical mechanical properties of all-weld metal

	Y.S(0.2%OS) (MPa)	T.S (MPa)	El. (%)	IV (J) R.T	IV (J) -20℃	Remarks
AWS A5.4		min. 520	min. 30			
EN ISO 3581-A	min. 350	min. 550	min. 25			
Example	430	620	40	80	65	AW

* AW : As-Welded

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	2.0	2.6	3.2	4.0	5.0
Length	(mm)	250	300	350	350	350
Amp.	F	40~60	50~70	70~110	100~150	140~180
(A)	V · OH	35~45	45~60	65~90	90~130	–

Approvals

CE

KST-410

For stainless steel (13%Cr, Hardfacing)

Classifications

EN ISO 3581-A:2012	: E 13 R 12	KS D 7014	: E410-16
EN ISO 3581-B:2012	: ES410-16	JIS Z 3221	: ES410-16
AWS A5.4-06	: E410-16		

Description

- Covering is lime titania type for welding of 13%Cr steel and surfacing of the part where require cavitation or corrosion resistance is required.
- Excellent oxidation corrosion and abrasion resistance of the deposited weld metal.
- Preheat at 100~250℃ and postheat treat at 700~800℃ because of high self-hardening property of the deposited weld metal.
- Redry the electrode at 250~350℃ for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	Cu
0.08	0.70	0.76	0.030	0.004	0.15	12.10	0.10	0.08

Typical mechanical properties of all-weld metal

	Y.S (0.2%OS) (MPa)	T.S (MPa)	El. (%)	Remarks
AWS A5.4		min. 450	min. 20	
EN ISO 3581-A	min. 250	min. 450	min. 15	
Example	400	560	24	PWHT

*PWHT : 750℃x1Hr.

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	2.6	3.2	4.0	5.0
Length	(mm)	300	350	350	350
Amp.	F	60~90	80~110	110~150	150~180
(A)	V · OH	45~60	70~90	90~130	–

Approvals

CE

KST-430

For stainless steel (17%Cr, Hardfacing)

Classifications

EN ISO 3581-A:2012	: E 17 R 12	KS D 7014	: E430-16
EN ISO 3581-B:2012	: ES430-16	JIS Z 3221	: ES430-16
AWS A5.4-06	: E430-16		

Description

- Covering is lime titania type for welding of 17%Cr stainless steel or AISI 403, 405
- Preheat at 200~300℃ and postheat treat at 700~800℃.
- Redry the electrode at 250~350℃ for 30~60 minutes prior to use.

Welding positions



Typical chemical composition of all-weld metal (%)

C	Si	Mn	P	S	Ni	Cr	Mo	Cu
0.07	0.42	0.75	0.028	0.009	0.20	17.43	0.20	0.30

Typical mechanical properties of all-weld metal

	Y.S (0.2%OS) (MPa)	T.S (MPa)	El. (%)	Remarks
AWS A5.4		min. 450	min. 20	
EN ISO 3581-A	min. 300	min. 450	min. 15	
Example	380	530	27	PWHT

* PWHT : 780℃x2Hr.

Sizes available and recommended currents (AC or DC +)

Dia.	(mm)	2.6	3.2	4.0	5.0
Length	(mm)	300	350	350	350
Amp.	F	55~75	80~100	110~140	140~170
(A)	V · OH	45~60	70~90	90~130	–

Approvals

CE

KW-T60

Monel 400, 402, K-500

Classifications

EN ISO 18274:2005	: SNi4060 (NiCu30Mn3Ti)	JIS Z 3334:2011	: SNi4060 (NiCu30Mn3Ti)
AWS A5.14-2011	: ERNiCu-7	KS B 18274:2014	: SNi4060 (NiCu30Mn3Ti)

Description

- TIG consumable for Monel 400, 402. (ASTM B127, B164, B165, UNS N04400)
- It can be used for surfacing steels and dissimilar welding of monel to steels.

Typical chemical composition of wire (%)

C	Si	Mn	Ni	Cu	Mo	W
0.03	0.21	3.25	28.58	65.20	0.21	2.20

Typical mechanical properties of all-weld metal

	Y.S. (MPa)	T.S. (MPa)	El. (%)
AWS A5.14		480	
Example		510	31

KW-TCuNi

Monel 450, Cupronickel

Classifications

EN ISO 14640:2005	: W Cu 7158 (CuNi30)	KS D 7044:2004	: YCuNi-3
AWS A5.7-07	: ERCuNi	JIS Z 3341:2005	: YCuNi-3

Description

- TIG consumable for 70%Cu-30%Ni Cupronickel and copper alloys.
- It can be used for surfacing steels and dissimilar welding of copper alloys with steels.

Typical chemical composition of wire (%)

C	Si	Mn	Cu	Ni	Ti
0.01	0.08	0.79	Rem.	30.71	0.30

Typical mechanical properties of all-weld metal

	T.S. (MPa)	El. (%)
AWS A5.7	345	–
Example	345	30

MIG Consumables

M-316L

For austenite stainless steel (Low carbon, 18%Cr-12%Ni-Mo STS)

Classifications

EN ISO 14343-B:2009	: SS 316L	JIS Z 3321:2013	: YS316L
AWS A5.9-2012	: ER316L	KS D 3696:2006	: STSY316L

Description

- MIG welding of 18%Cr-12%Ni-2%Mo austenite stainless steels (AISI STS 316)
- A various application of the petrochemical industrial apprattuese.
- WRC 1992 FN 3~8 (Chemical Composition of wire, If required)

Typical chemical composition of wire (%)

C	Si	Mn	Ni	Cr	Mo
0.02	0.51	1.61	11.81	18.78	2.49

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) 0℃	IV (J) -196℃
AWS A5.9		min. 490	min. 30		
EN ISO 14343	min. 320	min. 510	min. 25		
Example	394	556	41	113	62

M-410

For martensite stainless steel (Low Carbon,12%Cr STS)

Classifications

EN ISO 14343-B:2009	: SS 410	JIS Z 3321:2013	: YS410
AWS A5.9-2012	: ER410	KS D 3696:2006	: STSY410

Description

- MIG welding of 12%Cr martensite stainless steels. (AISI STS 403, 410)
- It's used for surfacing of sealing faces of valves for gas, water and steam piping system at service temperatures up to 450℃

Typical chemical composition of wire (%)

C	Si	Mn	Ni	Cr
0.01	0.32	0.36	0.19	12.61

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	Remark
AWS A5.9		min. 520	min. 20	
EN ISO 14343	min. 250	min. 450	min. 15	PWHT
Example	320	540	35	

* PWHT : Heat to 730~760℃, for 1h, Furnace cooling down to 315℃, then air cooling

MIG Consumables

M-430

For ferrite stainless steels (16%Cr STS)

Classifications

EN ISO 14343-B:2009	: SS 430	JIS Z 3321:2013	: YS430
AWS A5.9-2012	: ER430	KS D 7026:2005	: STSY430

Description

- MIG welding of 16%Cr ferrite stainless steels. (AISI 409, 430Ti, 431, ASTM A176)
- It's used for automobile muffler welding

Typical chemical composition of wire (%)

C	Si	Mn	Ni	Cr
0.01	0.32	0.39	0.24	16.67

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	Remark
AWS A5.9		min. 520	min. 20	
EN ISO 14343	min. 250	min. 450	min. 15	PWHT
Example	310	530	35	

* PWHT : Heat to 760~790℃, for 2h Furnace cooling down to 600℃, then air cooling

TIG Consumables

T-2209

For duplex stainless steels (Low carbon, 22%Cr-9%Ni-Mo STS)

Classifications

EN ISO 14343-A:2009	: W 22 9 3 N L	AWS A5.9-15	: ER2209
EN ISO 14343-B:2009	: SS 2209	JIS Z 3321:2013	: YS2209

Description

- TIG welding of 22%Cr-9%Ni-3%Mo duplex stainless steels (UNS S31803, STS 329J1, 329J2L)
- A various application of the petrochemical offshore structure and distilling apparatuses.

Typical chemical composition of wire (%)

C	Si	Mn	Ni	Cr	Mo
0.01	0.40	1.67	8.70	22.70	3.10

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -10℃	IV (J) -50℃
AWS A5.9		min. 690	min. 20		
EN ISO 14343	min. 450	min. 550	min. 20		
Example	769	855	32	183	160

T-2594

For Super duplex stainless steels (25%Cr-9%Ni-4%Mo STS)

Classifications

EN ISO 14343-A:2009 : W 25 9 4 N L
EN ISO 14343-B:2009 : SS 2594
AWS A5.9-2012 : ER2594

Description

- TIG welding of 25%Cr-9%Ni-4%Mo duplex stainless steels.(UNS S32750, S32760, S32550, S31260)
- A various application of the petrochemical offshore structure and distilling apparatuses.

Typical chemical composition of wire (%)

C	Si	Mn	Ni	Cr	Mo	PREN
0.02	0.42	0.66	9.18	25.06	3.88	41

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) 20℃	IV (J) -50℃
AWS A5.9		min. 760	min. 15		
EN ISO 14343	min. 550	min. 620	min. 30		
Example	640	800	32	220	200

T-308L

For austenite stainless steel (Low carbon, 18%Cr-8%Ni STS)

Classifications

EN ISO 14343-A:2009	: W 19 9 L	JIS Z 3321:2013	: YS308L
EN ISO 14343-B:2009	: SS 308L	KS D 3696:2006	: STSY308L
AWS A5.9-2012	: ER308L		

Description

- TIG welding of 18%Cr-8%Ni austenite stainless steels (AISI STS 301, 302, 304)
- A various application of the petrochemical , nuclear power plant appratuese.
- WRC 1992 FN 3~8 (Chemical Composition of wire, If required)

Typical chemical composition of wire (%)

C	Si	Mn	Ni	Cr
0.02	0.38	1.90	9.77	19.79

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) 0℃	IV (J) -196℃
AWS A5.9		min. 520	min. 35		
EN ISO 14343	min. 320	min. 510	min. 30		
Example	390	580	44	160	80

T-309L

For austenite stainless steel (Low carbon, Dissimilar steels)

Classifications

EN ISO 14343-B:2009	: SS 309L	JIS Z 3321:2013	: YS309L
AWS A5.9-2012	: ER309L	KS D 3696:2006	: STSY309L

Description

- TIG welding of 22%Cr-12%Ni STS and dissimilar steels such as 304L to mild steels or low alloy steels.
- A various application of petrochemical and fiber industrial appratuese.

Typical chemical composition of wire (%)

C	Si	Mn	Ni	Cr
0.01	0.45	1.64	13.78	23.09

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) 0℃	IV (J) -196℃
AWS A5.9		min. 520	min. 30		
EN ISO 14343	min. 320	min. 510	min. 25		
Example	445	568	42	130	52

T-309LMo

For austenite stainless steel (22%Cr-12%Ni-Mo STS)

Classifications

EN ISO 14343-A:2009	: G 23 12 2 L	AWS A5.9-2012	: ER309LMo
EN ISO 14343-B:2009	: SS 309LMo	JIS Z 3321:2013	: YS309LMo

Description

- TIG welding of 22%Cr-12%Ni-2%Mo austenite stainless steels.
- A various application of the petrochemical plant appratuese.

Typical chemical composition of wire (%)

C	Si	Mn	Ni	Cr	Mo
0.01	0.45	1.51	14.62	21.59	2.60

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) 0℃	IV (J) -196℃
EN ISO 14343	min. 350	min. 550	min. 25		
Example	420	660	33	92	89

T-312

For austenite stainless steel (Dissimilar steels)

Classifications

EN ISO 14343-B:2009	: SS 312	JIS Z 3321:2013	: YS312
AWS A5.9-2012	: ER312	KS D 3696:2006	: STSY312

Description

- TIG welding of 29%Cr-9%Ni STS and dissimilar steels such as 304L to mild steels or low alloy steels.
- A various application to high, low carbon steel and cald welding.

Typical chemical composition of wire (%)

C	Si	Mn	Ni	Cr
0.11	0.41	1.81	8.92	30.63

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)
AWS A5.9		min. 660	min. 22
EN ISO 14343	min. 450	min. 650	min. 15
Example	480	790	25

T-316L

For austenite stainless steel (Low carbon, 18%Cr-12%Ni-Mo STS)

Classifications

EN ISO 14343-A:2009	: W 19 12 3 L	JIS Z 3321:2008	: Y316L
EN ISO 14343-B:2009	: SS 316L	KS D 3696:2006	: STSY316L
AWS A5.9-2012	: ER316L		

Description

- TIG welding of 18%Cr-12%Ni-2%Mo austenite stainless steels (AISI STS 316, 316L)
- A various application of chemical plant, fiber and paper inductrial appratuese.
- WRC 1992 FN 3~8 (Chemical Composition of wire, If required)

Typical chemical composition of wire (%)

C	Si	Mn	Ni	Cr	Mo
0.02	0.40	1.73	11.17	18.15	2.22

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) 0℃	IV (J) -196℃
AWS A5.9		min. 490	min. 30		
EN ISO 14343	min. 320	min. 510	min. 25		
Example	430	560	40	150	45

T-410

For martensite stainless steel (Low Carbon,12%Cr STS)

Classifications

EN ISO 14343-B:2009	: SS 410	JIS Z 3321:2013	: YS410
AWS A5.9-2012	: ER410	KS D 3696:2006	: STSY410

Description

- TIG welding of 12%Cr martensite stainless steels. (AISI STS 403, 410)
- It's used for surfacing of sealing faces of valves for gas, water and steam piping system at service temperatures up to 450℃

Typical chemical composition of wire (%)

C	Si	Mn	Ni	Cr
0.01	0.32	0.36	0.19	12.61

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	Remark
AWS A5.9		min. 520	min. 20	
EN ISO 14343	min. 250	min. 450	min. 15	PWHT
Example	320	530	37	

* PWHT : Heat to 730~760℃, for 1h, Furnace cooling down to 315℃, then air cooling

TIG Consumables

T-430

For ferrite stainless steels (16%Cr STS)

Classifications

EN ISO 14343-B:2009	: SS 430	JIS Z 3321:2013	: YS430
AWS A5.9-2012	: ER430	KS D 3696:2006	: STSY430

Description

- TIG welding of 16%Cr ferrite stainless steels. (AISI 409, 430Ti, 431, ASTM A176)
- It's used for automobile muffler welding

Typical chemical composition of wire (%)

C	Si	Mn	Ni	Cr
0.01	0.32	0.39	0.24	16.67

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	Remark
AWS A5.9		min. 520	min. 20	
EN ISO 14343	min. 250	min. 450	min. 15	PWHT
Example	270	530	29	

* PWHT : Heat to 760~790℃ for 2h

T-50

For mild steels and 490MPa tensile strength steel

Classifications

EN 636-A:2008	: W 46 3 W3Si1	JIS Z 3316	: W 49 A 3U 6
EN 636-B:2008	: W 49A 3 U W6	KS D 7140	: YGT50
AWS A5.18-05	: ER70S-6		

Description

- For mild steel and 490MPa tensile strength steel welding of structural steels, machineries and vehicles.
- Excellent mechanical and toughness properties in low temperature conditions.
- It is generally used in root pass welding of pipes in all positions.
- Proper tungsten electrode extension from the tip of torch is 4~6mm in general.

Typical chemical composition of rod (%)

C	Si	Mn	P	S
0.07	0.82	1.52	0.012	0.015

Typical mechanical properties of all-weld-metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -30℃	Remarks
AWS A5.18	min. 400	min. 480	min. 22	≥ 27	Ar
EN 636-A	min. 460	530~680	min. 20	≥ 47	Ar
Example	490	580	30	130	Ar

Operating data

Dia.(mm)	2.4~3.2
Current (Amp.)	200 ~ 300

Polarity and Shielding gas

- DCEN (DC-)
- Ar : (15~25ℓ/min)

Approvals

Shielding gas	ABS	LR	KR
Ar	2YSA	4YMH15	RSW54G

T-53

For mild steels and 490MPa tensile strength steel

Classifications

EN 636-A:2008	: W 46 3 W2Si1	JIS Z 3316	: W 49 A 3U 3
EN 636-B:2008	: W 49A 3 U W3	KS D 7140	: YGT50
AWS A5.18-05	: ER70S-3		

Description

- For mild steel and 490MPa tensile strength steel welding of structural steels, machineries and vehicles.
- Excellent mechanical and toughness properties in low temperature conditions.
- It is generally used in root pass and to support the welding when back pass is impossible.

Typical chemical composition of rod (%)

C	Si	Mn	P	S
0.07	0.65	1.18	0.010	0.009

Typical mechanical properties of all-weld-metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -30℃	Remarks
AWS A5.18	min. 400	min. 480	min. 22	≥ 27	Ar
EN 636-A	min. 460	530~680	min. 20	≥ 47	Ar
Example	480	550	32	120	Ar

Operating data

Dia.(mm)	2.4~3.2
Current (Amp.)	200 ~ 300

Polarity and Shielding gas

- DCEN (DC-)
- Ar : (15~25ℓ/min)

T-80SNi1

For low temperature service steel(1.0%Ni)

Classifications

AWS A5.28-05	: ER80S-Ni1
EN ISO 636-A : 2008	: W 46 6 W2Ni1
EN ISO 636-B : 2008	: W 55A 5 W2Ni1

Description

- It is designed for welding of 550MPa high tensile steel for low temperature service of below -45℃.
- Suited for welding 1%Ni steel and other low temperature for low temperature pressure vessel, tank and pipe.
- Very good weldability in out of position work
- GTAW rod for welding of low temperature equiment and structure

Typical chemical composition of rod (%)

C	Si	Mn	P	S	Ni
0.09	0.63	1.11	0.009	0.008	0.83

Typical mechanical properties of all-weld-metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -45℃	Remarks
AWS A5.28	min. 470	min. 550	24	27	-
Example	592	678	35	162(@-45℃) 133(@-60℃)	As Weld

Operating data

Dia.(mm)	Voltage	Ampere
0.9	10~12	50~70
1.2	10~12	70~100
1.6	12~15	100~125
2.4	15~20	125~175
3.2	15~20	175~200

Polarity and Shielding gas

- DCEN (DC-)
- Ar : 100%Ar (15~25ℓ/min)

ZO-60

For 590MPa tensile strength steel

Classifications

EN ISO 16834-A:2007	: G 55 2 C Z	KS D 7025	: YGW21
EN ISO 16834-B:2007	: G 62A 2 U C 3M1T	JIS Z 3312	: G 59J A 1 U C 3M1T
AWS A5.28-05	: ER80S-G		

Description

- For butt and fillet welding of machineries, heavy equipments, pressure vessels and steel that demand for creep-resistant in high temperature
- Superior arc stability and X-ray soundness
- Stable weldability on high welding current
- Beautiful weld appearance due to low spatter

Typical chemical composition of wire (%)

C	Si	Mn	P	S	Mo	Ti
0.07	0.84	1.95	0.014	0.005	0.31	0.17

Typical mechanical properties of all-weld metal

	Y.S (MPa)	T.S (MPa)	El. (%)	IV (J) -5℃	IV (J) -20℃	Remarks
AWS A5.18		min. 550				
EN ISO 16834-B	min. 530	620~820	min. 15		≥ 47	CO_2
Example	550	640	27	120	110	CO_2

Operating data

Dia.(mm)		1.2	1.4
Current (Amp.)	Flat (PA/1G)	120 ~ 350	150 ~ 400
	Vertical (PF/3G)	80 ~ 180	100 ~ 250
	Overhead (PE/4G)	80 ~ 180	100 ~ 250

Polarity and Shielding gas

- DCEP (DC+)
- CO_2 : 100% CO_2 (15~25ℓ /min.)

Approvals

Shielding gas	NK
CO_2	KSW3Y46G

* Others: JIS