KST-316L

COVEREDE ELECTRODE
FOR STAINLESS STEEL

KISWEL

Rev.0

KST-316L

■ Description

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

■ Classification

- **AWS A5.4 : E316L-16**
- **JIS Z 3221 : ES316L-16**
- **EN ISO 3581-A : E 19 12 3 L R 12**
- **EN ISO 3581-B : ES316L-16**

■ Welding Position

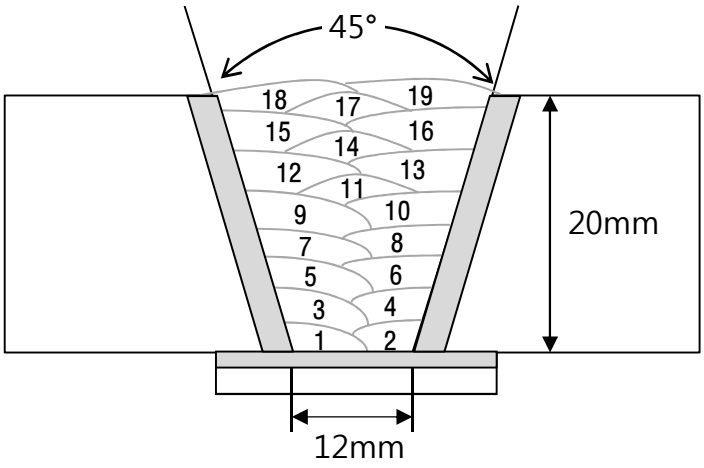


■ Base Materials

1.4401 X5CrNiMo17-12-2, 1.4404 X2CrNiMo17-12-2, 1.4435 X2CrNiMo18-14-13, 1.4436 X3CrNiMo17-13-3, 1.4571 X6CrNiMoTi17-12-2, 1.4580 X6CrNiMoNb17-12-2

UNS S31603, S31653
AISI 316L, 316Ti, 316Cb

■ All Weld Metal Test Specimen



Base metal	A36 (Buttering)
Size	4.0*350mm
Polarity / Current	DC+ / 135~140A
Welding Position	PA / 1G
Heat Input	8.1~12.9 kJ/cm

■ Typical Mechanical Properties of Weld Metal

	Y.S (MPa)	T.S (MPa)	El. (%)	I.V (J) (J @ Temp)	PWHT	Remark
AWS Spec.	-	≥490	≥30	-	A.W	1G
KST-316L	390	570	43	40 @ -120℃	A.W	

■ Typical Chemical Composition of Weld Metal (%)

	C	Si	Mn	P	S	Ni	Cr	Mo
AWS Spec.	≤0.04	≤1.00	0.5~ 2.5	≤0.04	≤0.03	11.0~ 14.0	17.0~ 20.0	2.0~ 3.0
KST-316L	0.03	0.75	0.80	0.028	0.011	11.71	17.95	2.60

■ Weldability

		Flat, H-Fillet	V-Up
Arc	Stability	Excellent	Good
	Concentration	Good	Excellent
	Force	Good	Good
Slag	Fluidity	Excellent	Good
	Removability	Good	Good
Spatter	Quantity	Excellent	Excellent
Fume	Quantity	Good	Good
Porosity	Occurrence	Good	Good

■ Bead Appearance



H-Fillet, 3.2*350mm, DC+ 110~115A



V-Up, 3.2*350mm, DC+ 75~80A

■ Welding Efficiency

Nominal electrode efficiency (%)	Deposition efficiency (%)
85~90	55~60

1) Size : 3.2*350mm

2) Nominal electrode efficiency (%) : M_D/M_{CN} *100

3) Deposition efficiency (%) : $M_D/(M_E-M_S)$*100

* M_D : mass of deposited weld metal
* M_{CN} : nominal mass of consumed core wire
* M_E : total mass of electrodes tested
* M_S : total mass of the stub ends

■ IGC Test Result & Ferrite Number

ASTM A262 Practice E	FN (WRC 1992)
Pass (No Crack)	5~8

■ Recommended Welding Parameter (AC or DC+)

Diameter (mm)	2.0	2.6	3.2	4.0	5.0
Length (mm)	300	300	350	350	350
Flat, Fillet	40~50	55~80	90~130	110~150	140~180
V-Up	35~45	40~60	70~90	90~130	-

■ Packaging and Available sizes



Diameter (mm)		2.0	2.6	3.2	4.0	5.0
Length (mm)		300	300	350	350	350
Carton	Inner	2, 5Kg				
	Out	20Kg (2Kg x 10EA, 5Kg x 4EA)				
Vacuum	Inner	2Kg				
	Out	10Kg (2Kg x 5EA)				

* Identification Imprint : E308L-16 KISWEL

* Tip Color : Red

■ Approval

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

* Remark : CWB, TUV, CE

■ Control Instruction

1. Storage

1) On principle covered electrodes should be in their original packaging until used. If possible the packs of electrodes should be taken out of storage in the sequence in which they were received in warehouse.
2) The covered electrodes must be stored in dry rooms to protect them against damage caused by moisture. The room must be fitted out with pallets or shelves since storage directly on the floor or against the walls is not recommended.
3) Opened packs of electrodes should also be stored in dry and, if necessary, heated rooms so that there is no likelihood of the temperature dropping below the dew point.

AWS Classification	Store Condition (Opened packs of electrode)	
	Ambient Air	Holding Oven
E316L-16	30±10℃ Humidity max. 50%	High 30~140℃ than room temperature

2. Re-drying

1) Where electrodes have become damp it is recommended that re-drying is carried out immediately prior to welding in accordance with the temperature details specified in the following table.
2) Electrodes that have been in direct contact with water, grease or oil should not be used for welding fabrication.

Type of coating	Re-drying temp. (℃)	Re-Drying time (min)
Lime titania	250~350	30~60

KISWEL

The Management System of KISWEL LTD, 704, Gongdan-ro, Seongsan-gu, Changwon-si, Gyeongnam 51544, Republic of Korea, 70, Saebyeok-ro 63beon-gil, Sasang-gu, Busan 47018, Republic of Korea has been approved by Lloyd's Register Quality Assurance to : IATF 16949:2016, ISO 14001:2015, applicable to : Manufacture of solid welding wires & rods, flux cored wires, submerged arc welding wires & fluxes, stainless steel welding wires & rods and covered electrodes.
More information : www.kiswel.com

