

# **SC-81LT**

FLUX CORED ARC WELDING CONSUMABLE  
FOR WELDING OF LOW-TEMPERATURE  
SERVICE STEEL

2020.12



## ❖ Specification

*AWS A5.29*

*E81T1-K2C*

*(AWS A5.29M*

*E551T1-K2C)*

*EN ISO 17632-A*

*T46 6 1.5Ni P C1 1 H5*

*JIS Z3313*

*T55 6 T1-1 C A-N3*

## ❖ Applications

SC-81LT is a titania type flux cored wire for welding of low-temperature service steel.

## ❖ Characteristics on Usage

SC-81LT is titania type flux cored wire for all position welding with CO<sub>2</sub> shielding gas. This wire provide excellent notch toughness at low temperature

## ❖ Note on Usage

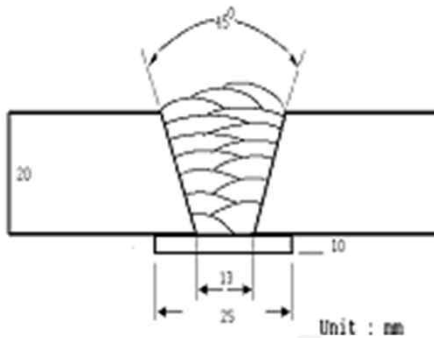
1. Proper preheating(50~150℃) and interpass temperature must be used in order to release hydrogen which may cause cracking in weld metal when electrodes are used for medium and heavy plates
2. Use 100% CO<sub>2</sub> gas.



**Mechanical Properties & Chemical Composition of All Weld Metal**

❖ **Welding Conditions**

Method by AWS Spec.



[ Joint Preparation & Layer Details ]

- Welding Position** : 1G(PA)
- Diameter(mm)** : 1.2mm
- Shielding Gas** : 100% CO<sub>2</sub>
- Flow Rate(ℓ /min.)** : 20
- Amp./ Volt.** : 260~280 / 29~31
- Stick-Out(mm)** : 20~25
- Pre-Heat(℃)** : R.T .
- Interpass Temp.(℃)** : 150±15
- Polarity** : DC(+)

❖ **Mechanical Properties of all weld metal**

Consumable	Tensile Test			CVN Impact Test J(ft · lbs)	
	YS MPa (lbs/in <sup>2</sup> )	TS MPa (lbs/in <sup>2</sup> )	EL(%)	-29℃ (-20°F)	-60℃ (-76°F)
SC-81LT	520 (75,000)	610 (88,000)	28.0	130 (96)	85 (63)
AWS A5.29 E81T1-K2C	≥ 470 (68,000)	550~690 (80,000~ 100,000)	≥ 19	≥27J at -29℃ (≥20ft · lbs at -20°F)	

❖ **Chemical Analysis of all weld metal(wt%)**

Consumable	C	Si	Mn	P	S	Ni
SC-81LT	0.04	0.26	1.10	0.012	0.011	1.50
AWS A5.29 E81T1-K2C	≤0.15	≤0.80	0.5~1.75	≤0.03	≤0.03	1.0~2.0

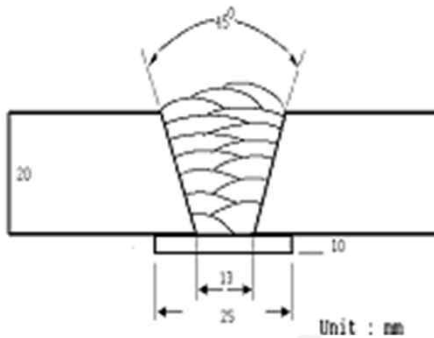
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING CO., LTD. affect the results obtained in applying this type of information. These variables include, but are not limited to, welding procedure, shielding gas, plate chemistry and temperature, weldment design, fabrication methods and service requirements.



## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Spec.



[ Joint Preparation & Layer Details ]

Welding Position	: 1G(PA)
Diameter(mm)	: 1.4mm
Shielding Gas	: 100% CO <sub>2</sub>
Flow Rate(ℓ /min.)	: 20
Amp./ Volt.	: 290~310 / 29~32
Stick-Out(mm)	: 20~25
Pre-Heat(°C)	: R.T .
Interpass Temp.(°C)	: 150±15
Polarity	: DC(+)

### ❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test J(ft · lbs)	
	YS MPa (lbs/in <sup>2</sup> )	TS MPa (lbs/in <sup>2</sup> )	EL(%)	-29°C (-20°F)	-60°C (-76°F)
SC-81LT	530 (77,000)	615 (89,000)	27.5	125 (92)	80 (59)
AWS A5.29 E81T1-K2C	≥ 470 (68,000)	550~690 (80,000~ 100,000)	≥ 19	≥27J at -29°C (≥20ft · lbs at -20°F)	

### ❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni
SC-81LT	0.04	0.28	1.10	0.012	0.011	1.55
AWS A5.29 E81T1-K2C	≤0.15	≤0.80	0.5~1.75	≤0.03	≤0.03	1.0~2.0

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## Welding Efficiency

### ❖ Deposition Rate & Efficiency

Consumable (size)	Welding Conditions		Deposition Efficiency(%)	Deposition Rate kg/hr(lb/hr)
	Amp.(A)	Volt.(V)		
SC-81LT  1.2mm (0.045in)	200	26	84~86	2.4 (5.3)
	250	30	84~86	3.5 (7.7)
	300	33	85~87	4.5 (9.9)
SC-81LT  1.4mm (0.052in)	250	27	84~86	2.4 (5.3)
	300	31	84~86	3.3 (7.3)
	350	35	85~87	4.4 (9.7)
Remark			Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	* Shielding Gas : 100%CO <sub>2</sub> Deposition rate =(Deposited metal weight/ Welding time,min.)×60

\* Shielding Gas : 100%CO<sub>2</sub>



## Diffusible Hydrogen Content

### ❖ Welding Conditions

Diameter(mm)	: 1.2 (0.045in)	Amps(A) / Volts(V)	: 280 / 31
Shielding Gas	: 100%CO <sub>2</sub>	Stick-Out(mm)	: 20~25mm (0.79~0.98in)
Flow Rate(ℓ /min.)	: 20	Welding Speed	: 30 cm/min (12 in/min)
Welding Position	: 1G (PA)	Current Type & Polarity	: DC(+)

### ❖ Hydrogen Analysis Using Gas Chromatography Method

Hydrogen Evolution Time	: 72 hrs
Evolution Temp.	: 45 °C(113°F)
Barometric Pressure	: 780 mm-Hg

### ❖ Result(ml/100g Weld Metal)

X1	X2	X3	X4
3.8	3.9	3.7	3.8

**Average Hydrogen Content 3.8 ml / 100g Weld Metal**



## ❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia.	
			1.2mm(0.045in)	1.4mm(0.052in)
SC-81LT	100% CO <sub>2</sub>	Flat	250~300 Amp	270~330 Amp
		V-up Over head	170~230 Amp	180~240 Amp
		V-down	250~300 Amp	170~320 Amp

## ❖ AUTHORIZED APPROVAL DETAILS

Welding position	Register of shipping & size(mm)				
	ABS	LR	DNV	KR	NK
All V-down	5Y400SA H5 1.2mm (0.045in)	5Y40S H5 1.2mm (0.045in)	V Y40MS(H5) 1.2~1.4mm (0.045~0.052in)	5Y40SG(C) H5 1.2~1.4mm (0.045~0.052in)	KSWL3G(C) H5 1.2~1.4mm (0.045~0.052in)

## ❖ F No & A No

F No	A No
6	10