

SC-80K2

FLUX CORED ARC WELDING CONSUMABLES
FOR WELDING OF 550MPa CLASS
HIGH TENSILE STEEL

2022.02



❖ Specification

<i>AWS A5.29</i>	E80T1-K2C
<i>(AWS A5.29M)</i>	E550T-K2C)
<i>EN ISO 17632-A</i>	T46 6 1.5Ni R C1 3 H5
<i>JIS Z3313</i>	T55 6 T1-0 C A-N3

❖ Applications

Only Flat, H-Fillet welding of Low Temperature service.
Butt and Fillet welding of offshore structure, LNG and LPG carrier and storage tanks, etc.

❖ Characteristics on Usage

SC-80K2 is a metal type flux cored wire for high speed welding application in the flat and horizontal fillet position.
Arc stability is excellent, spatter loss is low and slag covering is uniform with good removability.

❖ Note on Usage

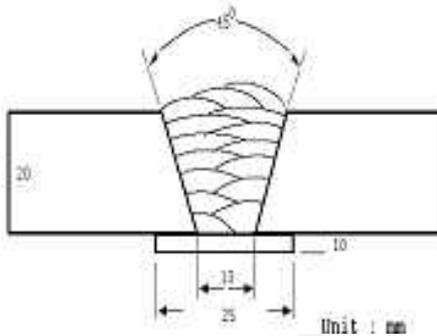
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices
2. Use 100% CO₂ gas.



Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Welding Position	: 1G(PA)
Diameter	: 1.2mm (0.045in)
Shielding Gas	: 100% CO ₂
Flow Rate	: 20 ℓ /min
Amp./ Volt.	: 280A / 32V
Stick-Out	: 20~25mm (0.79~0.98in)
Pre-Heat	: R.T .
Interpass Temp.	: 150±15℃ (302±59°F)
Polarity	: DC(+)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test J(ft · lbs)	
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	-40℃ (-40°F)	-60℃ (-76°F)
SC-80K2	580 (84,000)	640 (93,000)	26.0	103(76)	65(48)
AWS A5.29 E80T1-K2	≥ 470 (68,000)	550~690 (80,000~ 100,000)	≥ 19	≥ 27J at -60℃ (≥ 20ft · lbs at -76°F)	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni
SC-80K2	0.06	0.48	1.48	0.011	0.008	1.50
AWS A5.29 E80T1-K2	≤ 0.15	≤ 0.8	0.50~1.75	≤ 0.030	≤ 0.030	1.00~2.00

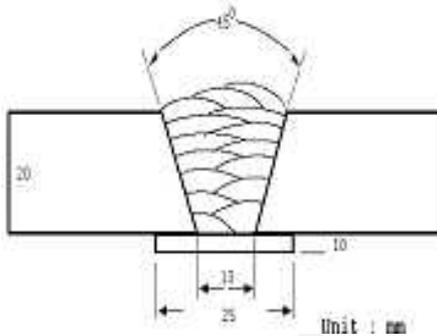
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Mechanical Properties & Chemical Composition of All Weld Metal

❖ **Welding Conditions**

Method by AWS Spec.



[Joint Preparation & Layer Details]

- Welding Position** : 1G(PA)
- Diameter** : 1.4mm (0.052in)
- Shielding Gas** : 100% CO₂
- Flow Rate** : 20 ℓ /min
- Amp./ Volt.** : 300A / 32V
- Stick-Out** : 20~25mm (0.79~0.98in)
- Pre-Heat** : R.T .
- Interpass Temp.** : 150±15℃ (302±59°F)
- Polarity** : DC(+)

❖ **Mechanical Properties of all weld metal**

Consumable	Tensile Test			CVN Impact Test J(ft · lbs)	
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	-40℃ (-40°F)	-60℃ (-76°F)
SC-80K2	575(83,000)	635(92,000)	26.5	97(72)	60(44)
AWS A5.29 E80T1-K2	≥ 470 (68,000)	550~690 (80,000~ 100,000)	≥ 19	≥ 27J at -60℃ (≥ 20ft · lbs at -76°F)	

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

Consumable	C	Si	Mn	P	S	Ni
SC-80K2	0.06	0.43	1.45	0.011	0.008	1.57
AWS A5.29 E80T1-K2	≤ 0.15	≤ 0.8	0.50~1.75	≤ 0.030	≤ 0.030	1.00~2.00

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Welding Efficiency

❖ Deposition Rate & Efficiency

Consumable (Size)	Welding Conditions		Wire Feed Speed m/min (in/min)	Deposition Efficiency(%)	Deposition Rate kg/hr(lb/hr)
	Amp.(A)	Volt.(V)			
SC-80K2 1.2 mm (0.045in)	200	26	5.0 (200)	85~87	2.0(4.4)
	250	30	6.3 (250)	87~89	2.9(6.4)
	300	33	7.7 (300)	91~93	3.6(7.9)
	350	38	9.0(350)	91~93	4.1(9.0)
SC-80K2 1.4 mm (0.052in)	300	31	7.6 (300)	90~92	5.1(11.2)
	350	36	10.2 (400)	91~93	5.8(12.8)
	380	36	12.8 (500)	91~93	6.5(14.3)
Remark				Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time,min.)×60

* Shielding Gas : 100% CO₂

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Diffusible Hydrogen Content

❖ Welding Conditions

Diameter	: 1.4mm (0.052in)	Amps(A) / Volts(V)	: 300A / 32V
Shielding Gas	: 100%CO ₂	Stick-Out	: 20~25mm (0.79~0.98in)
Flow Rate	: 20 l /min	Welding Speed	: 30 cm/min (12 in/min)
Welding Position	: 1G (PA)	Current Type & Polarity	: DC(+)

❖ Hydrogen Analysis Using Gas Chromatograph 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
4.2	3.9	4.0	4.1

Average Hydrogen Content **4.1 ml / 100g Weld Metal**



Proper Welding Condition

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia.	
			1.2mm (0.045in)	1.4mm (0.052in)
SC-80K2	100%CO ₂	F & HF	250~300Amp	300~350Amp

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Approvals

❖ Shipping Approvals

Welding Position	Register of shipping & Size mm(in)						
	KR	ABS	LR	BV	DNV	GL	NK
F & HF	RSW54Y 40G HHH	5Y400S H5	5Y40S H5	SA5Y40M HHH	VY40MS H5	6Y40H5S	KSW54Y40G HHH
	1.2~1.4 (0.045~ 0.052)	1.2~1.4 (0.045~ 0.052)	1.2~1.4 (0.045~ 0.052)	1.2~1.4 (0.045~ 0.052)	1.2~1.4 (0.045~ 0.052)	1.2~1.4 (0.045~ 0.052)	1.2~1.4 (0.045~0.052)

❖ F No & A No

F No	A No
6	10

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