HYUNDAI WELDING

Rev. 00

SC-81BF

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

HYUNDAI WELDING CO., LTD.

SC-81BF

❖ Specification

AWS A5.36	E81T1-M21A4-Ni1 H4
EN ISO 17632-A	T 46 4 1Ni P M21 1 H5

❖ Applications

All position welding for construction machinery, bridge structures and storage tanks

❖ Characteristics on Usage

SC-81BF is an all position flux cored wire designed for Ar+20~25% CO2 shielding. You can get smooth arc, and low spatter, good weldability. The weld metal impact values at –40℃(-40℉) is excellent and has good bead appearance, slag covering is uniform and easy to remove.

❖ Note on Usage

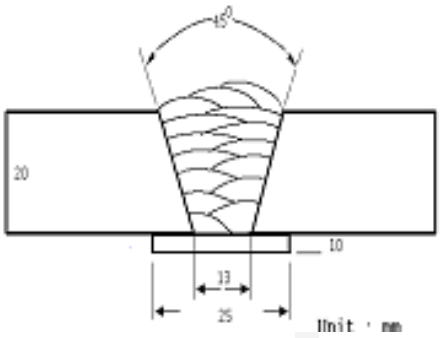
1. Proper preheating(50~150℃(150~302℉)) and interpass temperature must be used in order to release hydrogen which may cause cracking in weld metal when electrodes are used for medium and heavy plates.

2. Use Ar+20~25% CO_2 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(0.045in)
Shielding Gas	:	Ar+20%CO_2
Amp./ Volt.	:	270~280 /29~30
Stick-Out(mm)	:	20~25 (0.79~0.98in)
Pre-Heat(℃)	:	R.T .
Interpass Temp.(℃)	:	150±15 (302±59 ℉)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test J(ft·lbs)
SC-81BF	YS MPa(lbs/in²)	TS MPa((lbs/in²)	EL(%)	-40℃(-40℉)
	570 (82,650)	620 (89,990)	27.4	90(66)
AWS A5.36 E81T1-M21A4	**≥470 (68,200)**	**550~690 (79,800~100,000)**	**≥ 19**	**≥27(20) at –40℃(-40℉)**

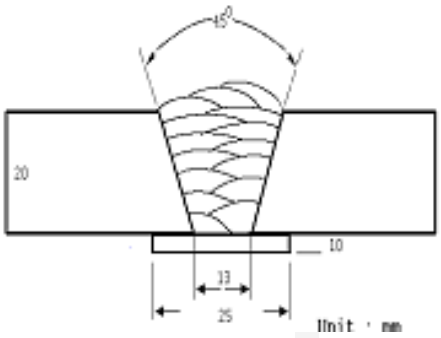
❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni	B
SC-81BF	0.047	0.43	1.18	0.007	0.005	0.87	0.003
AWS A5.36 Ni1	**≤0.12**	**≤0.80**	**≤1.75**	**≤0.03**	**≤0.03**	**0.8~1.1**	**-**

Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Welding Position	:	**1G(PA)**
Diameter(mm)	:	1.6mm(1/16 in)
Shielding Gas	:	Ar+20%CO_2
Amp./ Volt.	:	320~330 /29~30
Stick-Out(mm)	:	20~25 (0.79~0.98in)
Pre-Heat(℃)	:	R.T .
Interpass Temp.(℃)	:	150±15 (302±59 ℉)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test J(ft·lbs)
SC-81BF	YS MPa(lbs/in²)	TS MPa((lbs/in²)	EL(%)	-40℃(-40℉)
	580(84,100)	630(91,350)	26.8	85(63)
AWS A5.36 E81T1-M21A4	**≥470 (68,200)**	**550~690 (79,800~100,000)**	**≥ 19**	**≥27(20) at –40℃(-40℉)**

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni	B
SC-81BF	0.045	0.45	1.21	0.008	0.005	0.92	0.003
AWS A5.36 Ni1	**≤0.12**	**≤0.80**	**≤1.75**	**≤0.03**	**≤0.03**	**0.8~1.1**	**-**

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)			
1.2mm (0.045in)	200	26	10.2(400)	87~89	3.0(6.6)
	250	28	13.3(525)	88~89	4.1(9.0)
	300	32	15.3(600)	88~90	5.6(12.3)
1.6mm (1/16 in)	280	31	6.4 (250)	86~88	3.9(8.6)
	330	33	7.6 (300)	86~89	4.5(9.9)
	350	34	8.1 (320)	87~89	5.4(11.9)
	400	38	9.2 (360)	88~90	6.4(14.1)
Remark				Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time, min.)×60

* Shielding Gas : Ar+20%CO_2

Diffusible Hydrogen Content

❖ Welding Conditions

Diameter(mm)	:	**1.6mm(1/16in)**	**Amps(A) / Volts(V)**	:	310 / 30
Shielding Gas	:	Ar+20%CO_2	**Stick-Out(mm)**	:	20mm(0.79in)
Flow Rate(ℓ /min.)	:	20	**Welding Speed**	:	35 cm/min (13.8 in/min)
Welding Position	:	1G(PA)	**Current Polarity**	:	DC(+)

❖ Diffusible Hydrogen Test Using Gas Chromatography Method

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

❖ Result(㎖/100g Weld Metal)

X1	X2	X3	X4
3.3	**3.4**	**3.2**	**3.3**

Average Diffusible Hydrogen Content **3.3** ***㎖ / 100g Weld Metal***

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Current
1.2mm (0.045in)	Ar+20%CO_2	Flat	120~300 Amp
		V-up Overhead	120~260 Amp
		V-down	140~300 Amp
1.6mm (1/16 in)	Ar+20%CO_2	Flat	180~380 Amp
		V-up Overhead	160~320 Amp
		V-down	180~360 Amp

❖ F No. & A No.

F-No.	A-No.
6	10