

SF-80W

FLUX CORED ARC WELDING CONSUMABLES
for WELDING of ATMOSPHERIC
CORROSION RESISTING STEEL



❖ Specification

AWS A5.29 E81T1-W2C

JIS Z3320 YFA-58W

❖ Applications

All position welding of bridges, building using atmospheric corrosion resisting steels.

❖ Characteristics on Usage

SF-80W is the most widely used titania type flux cored wire for all position welding with CO₂ shielding gas. Arc stability is excellent, so spatter loss is low and slag covering is uniform with good removability. SF-80W is effective for use in insufficient in insufficient ventilation and/or space areas.

❖ Note on Usage

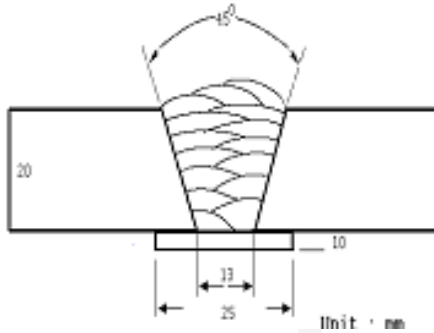
1. Proper preheating(50~150℃) and interpass temperature must be used in order to release hydrogen which may cause cracking in weld metal when electrodes are used for medium and heavy plates.
2. One-side welding defects such as hot cracking may occur with wrong welding parameter such as high welding speed.
3. Use 100% CO₂ gas.



Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Diameter(mm)	: 1.2mm
Shielding Gas	: 100% CO ₂
Flow Rate(ℓ /min.)	: 20~22
Amp./ Volt.	: 280 / 31
Stick-Out(mm)	: 20
Pre-Heat(°C)	: R.T.
Interpass Temp.(°C)	: 150±15
Polarity	: DC(+)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test (Joule)	
	YS(MPa)	TS(MPa)	EL(%)	-20°C	-30°C
SF-80W	540	615	26	86	42
AWS A5.29 E81T1-W2C	≥ 470	550~690	≥ 19	≥ 27J at -30°C	

❖ Chemical Analysis of all weld metal(wt%)

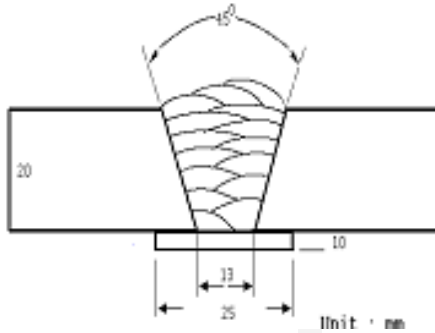
Consumable	C	Si	Mn	P	S	Cu	Cr	Ni
SF-80W	0.04	0.40	0.92	0.016	0.009	0.40	0.52	0.50
AWS A5.29 E81T1-W2C	≤ 0.12	≤ 0.60	0.5~1.30	≤ 0.03	≤ 0.03	0.30~0.75	0.45~0.70	0.4~0.80



Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Diameter(mm)	: 1.4mm
Shielding Gas	: 100% CO ₂
Flow Rate(l /min.)	: 20~22
Amp./ Volt.	: 300 / 32
Stick-Out(mm)	: 20
Pre-Heat(°C)	: R.T .
Interpass Temp.(°C)	: 150±15
Polarity	: DC(+)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test (Joule)	
	YS(MPa)	TS(MPa)	EL(%)	-20°C	-30°C
SF-80W	550	620	26.5	82	40
AWS A5.29 E81T1-W2C	≥ 470	550~690	≥ 19	≥ 27J at -30°C	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Cu	Cr	Ni
SF-80W	0.04	0.42	0.95	0.016	0.009	0.41	0.50	0.52
AWS A5.29 E81T1-W2C	≤ 0.12	≤ 0.60	0.5~1.30	≤ 0.03	≤ 0.03	0.30~0.75	0.45~0.70	0.4~0.80

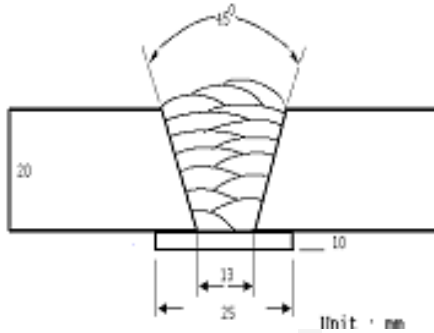
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING 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]

Diameter(mm)	: 1.6mm
Shielding Gas	: 100% CO ₂
Flow Rate(ℓ /min.)	: 20~22
Amp./ Volt.	: 330 / 33
Stick-Out(mm)	: 20
Pre-Heat(℃)	: R.T .
Interpass Temp.(℃)	: 150±15
Polarity	: DC(+)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test (Joule)	
	YS(MPa)	TS(MPa)	EL(%)	-20℃	-30℃
SF-80W	545	618	26	76	40
AWS A5.29 E81T1-W2C	≥ 470	550~690	≥ 19	≥ 27J at -30℃	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Cu	Cr	Ni
SF-80W	0.04	0.39	0.92	0.016	0.009	0.42	0.50	0.48
AWS A5.29 E81T1-W2C	≤ 0.12	≤ 0.60	0.5~1.30	≤ 0.03	≤ 0.03	0.30~0.75	0.45~0.70	0.4~0.80



Welding Efficiency

❖ Deposition Rate & Efficiency

Consumable (size)	Welding Conditions		Deposition Efficiency(%)	Deposition Rate(kg/hr)
	Amp.(A)	Volt.(V)		
SF-80W 1.2mm	150	24	84~87	2.2
	200	26	84~88	3.3
	250	28	85~88	4.3
	300	33	85~88	5.1
SF-80W 1.4mm	250	28	84~87	3.8
	300	32	86~88	4.8
	350	36	86~89	6.3
SF-80W 1.6mm	280	31	86~88	4.3
	330	33	86~89	4.8
	350	34	86~89	5.5
	400	38	88~90	6.0
Remark			Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time,min.)×60

* Shielding Gas : 100%CO₂



Diffusible Hydrogen Content

❖ Welding Conditions

Diameter(mm)	: 1.2	Amps(A) / Volts(V)	: 280 / 31
Shielding Gas	: 100% CO ₂	Stick-Out(mm)	: 20
Flow Rate(ℓ /min.)	: 20	Welding Speed	: 45 cpm
Welding Position	: 1G	Current Type & Polarity	: DC(+)

❖ Hydrogen Analysis Using Gas Chromatography Method

Hydrogen Evolution Time	: 72 hrs	Analysis Temp.	: 25 °C
Evolution Temp.	: 25 °C	Exposure Condition	: 80%RH-25°C
Barometric Pressure	: 780 mm-Hg		

❖ Result(ml/100g Weld Metal)

X1	X2	X3	X4
6.5	6.3	6.2	6.6

Average Hydrogen Content 6.4 ml / 100g Weld Metal



Proper Welding Condition

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia. (mm)		
			1.2mm	1.4mm	1.6mm
SF-80W	100%CO ₂	F & HF	120~300Amp	200~350Amp	200~400Amp
		V-Up & OH	120~260Amp	180~280Amp	180~280mp
		V-Down	200~300Amp	220~320Amp	250~320Amp