HYUNDAI WELDING

Rev. 06

SF-70W

FLUX CORED ARC WELDING CONSUMABLES
FOR ATMOSPHERIC CORROSION RESISTING STEEL

2022.02

HYUNDAI WELDING CO., LTD.

SF-70W

❖ Specification

EN ISO 17632-B	T49 2 T1-1 C1 A-NCC
JIS Z 3320	T49 2 T1-1 C A-NCC1 H10

❖ Applications

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

❖ Characteristics on Usage

SF-70W is the most widely used titania type flux cored wire for all position welding with CO_2 shielding gas. Arc stability is excellent, so spatter loss is low and slag covering is uniform with good removability. SF-70W is effective for use in insufficient in insufficient ventilation and/or space areas.

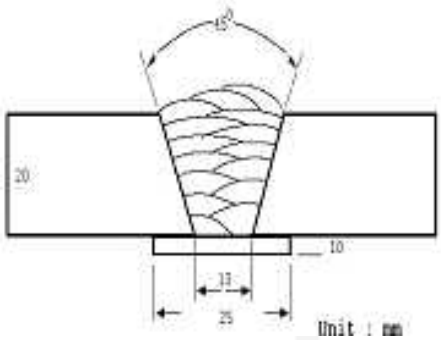
❖ Note on Usage

1. For preheating guidelines, please refer to your local standards and codes relative to your best practices
2. One-side welding defects such as hot cracking may occur with wrong welding parameter such as high welding speed.
3. Use 100% 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	:	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/in²)	TS MPa (lbs/in²)	EL (%)	-1℃ (30°F)	-18℃ (0°F)
SF-70W	518 (75,000)	580 (84,000)	28.0	66 (49)	46 (34)
N/S (Not Specified)					

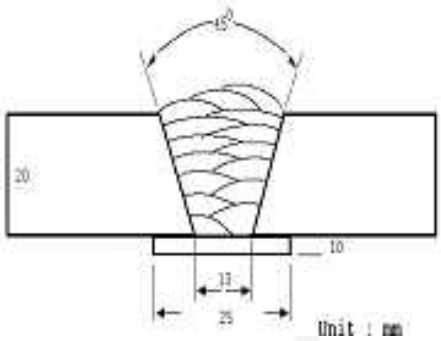
❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Cu	Cr	Ni
SF-70W	0.04	0.45	1.09	0.014	0.009	0.40	0.52	0.35
N/S (Not Specified)								

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%CO_2
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/in²)	TS MPa (lbs/in²)	EL (%)	-1℃ (30°F)	-18℃ (0°F)
SF-70W	522 (76,000)	585 (85,000)	27.5	62 (46)	44 (32)
N/S (Not Specified)					

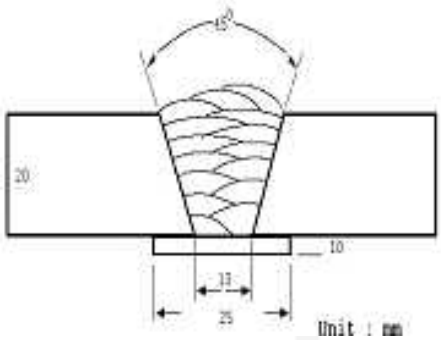
❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Cu	Cr	Ni
SF-70W	0.04	0.43	1.05	0.014	0.008	0.42	0.50	0.35
N/S (Not Specified)								

Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Welding Position	:	1G(PA)
Diameter	:	1.6mm (1/16in)
Shielding Gas	:	100%CO_2
Flow Rate	:	20 ℓ /min
Amp./ Volt.	:	320~330A / 29~30V
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/in²)	TS MPa (lbs/in²)	EL (%)	-1℃ (30°F)	-18℃ (0°F)
SF-70W	520 (75,000)	578 (84,000)	28.0	76 (56)	48 (35)
N/S (Not Specified)					

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Cu	Cr	Ni
SF-70W	0.04	0.42	1.05	0.014	0.008	0.38	0.50	0.34
N/S (Not Specified)								

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)			
SF- 70W 1.2mm (0.045in)	200	26	10.2 (400)	84~87	3.4 (7.5)
	250	28	11.5 (450)	85~88	4.5 (9.9)
	300	33	15.3 (600)	86~88	5.2 (11.4)
SF- 70W 1.4mm (0.052in)	250	28	7.6 (300)	85~87	3.9 (8.6)
	300	32	10.2 (400)	85~88	4.8 (10.6)
	330	36	12.8 (500)	86~89	5.8 (12.8)
SF- 70W 1.6mm (1/16in)	280	31	6.4 (250)	85~88	4.2 (9.2)
	330	33	7.6 (300)	86~88	4.8 (10.6)
	350	34	8.1 (320)	87~89	5.3 (11.7)
	400	38	9.2 (360)	87~90	5.7 (12.5)
Remark				Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time,min.)×60

* Shielding Gas : 100%CO_2

Diffusible Hydrogen Content

❖ Welding Conditions

Diameter	:	1.4mm (0.052in)	**Amps(A) / Volts(V)**	:	240A / 27V
Shielding Gas	:	100%CO_2	**Stick-Out**	:	20~25mm (0.79~0.98in)
Flow Rate	:	20 ℓ /min			
Welding Position	:	1G (PA)	**Welding Speed**	:	30 cm/min (12 in/min)
			Current Type & Polarity	:	DC(+)

❖ Hydrogen Analysis 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
6.4	**7.0**	**6.5**	**6.2**

Average Hydrogen Content 6.5 ㎖ / *100g Weld Metal*

Proper Welding Condition

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia.		
			1.2mm (0.045in)	1.4mm (0.052in)	1.6mm (1/16in)
SF-70W	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

❖ F No & A No

F No	A No
6	1