HYUNDAI WELDING

Rev. 05

SF-70MX

FLUX CORED ARC WELDING CONSUMABLE
FOR WELDING OF MILD & 490MPa CLASS
HIGH TENSILE STEEL

2022.02

HYUNDAI WELDING CO., LTD.

SF-70MX

❖ Specification

AWS A5.36	E70T1-C1A0-CS1
(AWS A5.36M	E490T1-C1A2-CS1)
(AWS A5.20	E70T-1C)
EN ISO 17632-A	T 42 0 R C1 3 H10
JIS Z 3313	T49 J 0 T1-0 C A-U H10

❖ Applications

Only Flat, H-Fillet welding of building, shipbuilding, bridge, machinery Vehicle using mild and 490Mpa class high tensile steels.

❖ Characteristics on Usage

SF-70MX is widely used metal type flux cored wire for flat, H-Fillet welding with CO_2 shielding gas..

Compared with solid wire, spatter loss is low and bead appearance is beautiful and arc is soft with good stability and high efficiency.

❖ Note on Usage

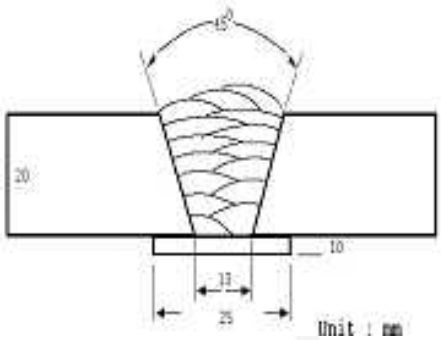
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices

2. 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 (%)	0℃ (32°F)	-18℃ (0°F)
SF-70MX	560 (81,000)	590 (85,000)	28	60 (44)	50 (37)
AWS A5.36 E70T1-C1A0-CS1	≥ 400 (58,000)	490~660 (71,000~ 98,000)	≥ 22	≥27J at -18℃ (≥20ft · lbs at 0°F)	

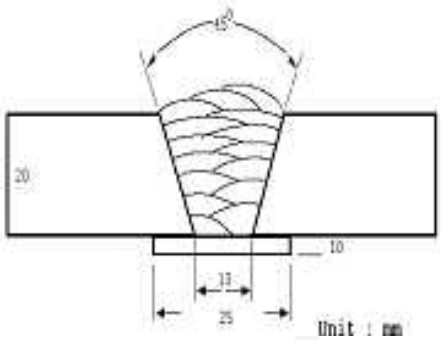
❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
SF-70MX	0.05	0.50	1.50	0.011	0.013
AWS A5.36 E70T1-C1A0-CS1	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

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 (%)	0℃ (32°F)	-18℃ (0°F)
SF-70MX	555 (80,000)	595 (86,000)	28.5	65 (48)	55 (21)
AWS A5.36 E70T1-C1A0-CS1	≥ 400 (58,000)	490~660 (71,000~ 96,000)	≥ 22	≥27J at -18℃ (≥20ft · lbs at 0°F)	

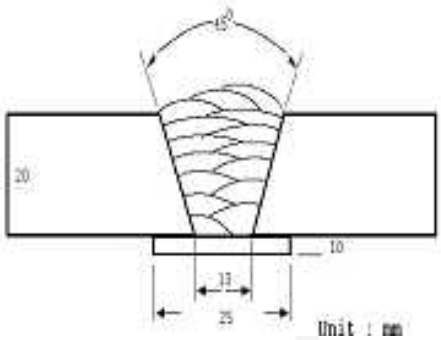
❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
SF-70MX	0.06	0.52	1.50	0.012	0.012
AWS A5.36 E70T1-C1A0-CS1	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

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.	:	330A / 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)	
SF-70MX	YS MPa (lbs/in²)	TS MPa (lbs/in²)	EL (%)	0℃ (32°F)	-18℃ (0°F)
	555 (80,000)	590 (85,000)	27.5	60 (44)	50 (37)
AWS A5.36 E70T1-C1A0-CS1	≥ 400 (58,000)	490~660 (71,000~ 96,000)	≥ 22	≥27J at -18℃ (≥20ft · lbs at 0°F)	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
SF-70MX	0.06	0.50	1.52	0.014	0.011
AWS A5.36 E70T1-C1A0-CS1	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

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-70MX 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	32	7.7 (300)	91~93	3.6(7.9)
	350	33	9.0(350)	91~93	4.1(9.0)
SF-70MX 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)
SF-70MX 1.6 mm (1/16in)	300	33	6.4 (250)	87~89	4.8(10.6)
	350	36	8.7 (300)	90~91	5.4(11.9)
	400	38	8.1 (320)	90~91	6.2(13.6)
	450	42	9.2 (360)	91~92	7.8(17.2)
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	:	1.4 mm (0.052in)	**Amps / Volts**	:	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 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
5.3	**5.4**	**5.2**	**5.3**

Average Hydrogen Content 5.3 ㎖ / *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-70MX	100%CO_2	F & HF	250~300Amp	300~350Amp	330~400Amp

Approvals

❖ Shipping Approvals

Welding Position	Register of shipping & Size mm(in)						
	KR	ABS	LR	BV	DNV	GL	NK
F, HF	2SMG, 2YSMG H10 1.2~1.6 (0.045~ 1/16)	2SA H10, 2YSA 1.2~1.6 (0.045~ 1/16)	2S, 2YS H10 1.2~1.6 (0.045~ 1/16)	SA2,2YMHH A2,2YMHH 1.2~1.6 (0.045~1/16)	IIYMSH10 1.2~1.6 (0.045~ 1/16)	2YS H10 1.2~1.6 (0.045~ 1/16)	KSW52G H10, KAW52MG H10 1.2~1.6 (0.045~1/16)

❖ F No & A No

F No	A No
6	1