

SF-71R

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

2020.12



❖ Specification

<i>AWS A5.20</i>	E71T-1C H4
<i>(AWS A5.20M)</i>	E491T1-1C H4)
<i>EN ISO 17632-A</i>	T42 2 P C1 1 H5

❖ Applications

Oil and gas construction, pipe, and offshore stations

❖ Characteristics on Usage

SF-71R is a titania-type flux cored wire to be used with 100%CO₂ gas shielding. It provide excellent notch toughness at low temperature, not only as-welded but also stress relieved state

❖ Note on Usage

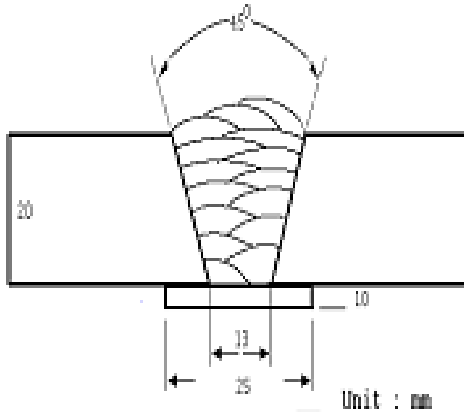
1. Proper preheating(50~150℃, 122~302°F) and interpass temperature must be used in order to release hydrogen which may cause cracking in weld metal when electrodes are used for medium and heavy plates
2. Use 100% CO₂ shielding gas



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)		Remark
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	0℃ (32°F)	-18℃ (0°F)	
SF-71R	520(75,000)	585(85,000)	28.5	104(77)	84(62)	As-welded
	500(73,000)	570(83,000)	30.0	94(69)	66(49)	PWHT (620℃x2hr)
AWS A5.20 E71T-1C	≥ 390 (56,000)	490~670 (70,000~ 97,000)	≥ 22	≥ 27J at -18℃ (≥ 20ft · lbs at 0°F)		-

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
SF-71R	0.05	0.50	1.41	0.010	0.006
AWS A5.20 E71T-1C	≤ 0.12	≤ 0.90	≤ 1.75	≤ 0.03	≤ 0.03

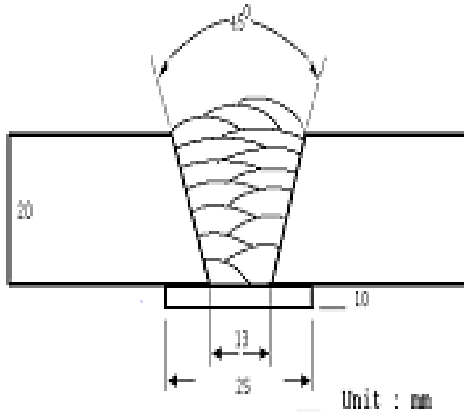
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING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

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)		Remark
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	0℃ (32°F)	-18℃ (0°F)	
SF-71R	520(75,000)	585(85,000)	28.5	104(77)	84(62)	As-welded
	500(73,000)	570(83,000)	30.0	94(69)	66(49)	PWHT (620℃x2hr)
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❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
SF-71R	0.05	0.48	1.39	0.010	0.006
AWS A5.20 E71T-1C	≤ 0.12	≤ 0.90	≤ 1.75	≤ 0.03	≤ 0.03

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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)			
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)
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)
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	: 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 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 °C (113°F)
Barometric Pressure	: 780 mm-Hg

❖ Result(ml/100g Weld Metal)

X1	X2	X3	X4	Avg.
3.6	3.5	3.7	3.7	3.6

Average Hydrogen Content 3.6 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)
SF-71R	100%CO ₂	F & HF	120~300Amp	150~350Amp
		V-Up & OH	120~260Amp	140~280Amp
		V-Down	200~300Amp	220~320Amp

❖ F No & A No

F No	A No
6	1

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