

SC-71SR

FLUX CORED ARC WELDING CONSUMABLE
FOR WELDING OF LOW-TEMPERATURE
SERVICE STEEL

2022.02

HYUNDAI WELDING CO., LTD.



❖ Specification

AWS A5.20 E71T-1C,-9C-J,-12C-J H4

(AWS A5.20M E491T-1C,-9C-J,-12C-J H4)

EN ISO 17632-A T42 4 P C1 1 H5

JIS Z3313 T49 4 T1-1 C AP

AWS D1.8

Wire Dia. mm(in)		
1.2(0.045)	-	-

* AWS D1.8 is available upon request

❖ Applications

Oil and gas construction, pipe, and offshore stations

❖ Characteristics on Usage

SC-71SR 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

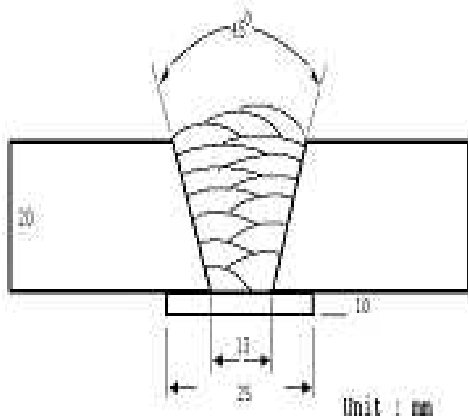
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices.
2. Use 100% CO₂ shielding gas



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(%)	-40℃ (-40°F)	-51℃ (-60°F)	
SC-71SR	560(81,000)	580(84,000)	28.0	80(59)	65(48)	As-welded
	540(78,000)	560(81,000)	30.0	60(44)	45(33)	PWHT (620℃x2hr)
AWS A5.20 E71T-12C-J	≥ 390 (56,000)	490~620 (70,000~90,000)	≥ 22	≥ 27J at -40℃ (≥ 20ft · lbs at -40°F)		-

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni
SC-71SR	0.05	0.40	1.20	0.011	0.010	0.38
AWS A5.20 E71T-12C-J	≤ 0.12	≤ 0.9	≤ 1.60	≤ 0.03	≤ 0.03	≤ 0.50

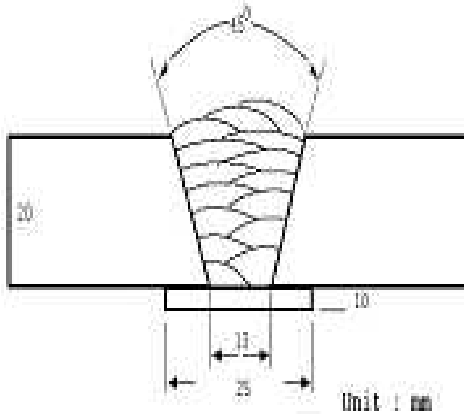
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Mechanical Properties & Chemical Composition of All Weld Metal

❖ 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(%)	-40℃ (-40°F)	-51℃ (-60°F)	
SC-71SR	550(80,000)	570(83,000)	28.0	89(66)	70(52)	As-welded
	535(78,000)	550(80,000)	30.0	71(52)	49(36)	PWHT (620℃x2hr)
AWS A5.20 E71T-12C-J	≥ 390 (56,000)	490~620 (70,000~90,000)	≥ 22	≥27J at -40℃ (≥20ft · lbs at -40°F)		-

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni
SC-71SR	0.05	0.40	1.20	0.011	0.010	0.38
AWS A5.20 E71T-12C-J	≤ 0.12	≤ 0.9	≤ 1.60	≤ 0.03	≤ 0.03	≤ 0.50

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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.
3.5	3.4	3.3	3.8	3.5

Average Hydrogen Content 3.5 ml / 100g Weld Metal

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Proper Welding Condition

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia.	
			1.2mm (0.045in)	1.4mm (0.052in)
SC-71SR	100%CO ₂	F & HF	120~300Amp	150~320Amp
		V-Up & OH	120~260Amp	140~280Amp
		V-Down	200~300Amp	220~320Amp

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Approvals

❖ AUTHORIZED APPROVAL DETAILS

Welding Position	Register of shipping & Size			
	ABS	LR	BV	DNV
All V-Down	4Y400SA H5 1.2 ~1.6mm (0.045~1/16in)	4Y40 H5 1.2 ~1.6mm (0.045~1/16in)	SA4Y40HHH 1.2 ~1.6mm (0.045~1/16in)	IVY40MS H5 1.2 ~1.6mm (0.045~1/16in)

❖ F No & A No

F No	A No
6	1

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