

SC-71MSR

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

2024.12



❖ Specification

<i>AWS A5.20</i>	E71T-12M-J
<i>(AWS A5.20M)</i>	E491T-12M-J
<i>EN ISO 17632-A</i>	T46 4 P M21 1 H5

❖ Applications

Oil and gas construction, pipe, and offshore stations

❖ Characteristics on Usage

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

❖ Note on Usage

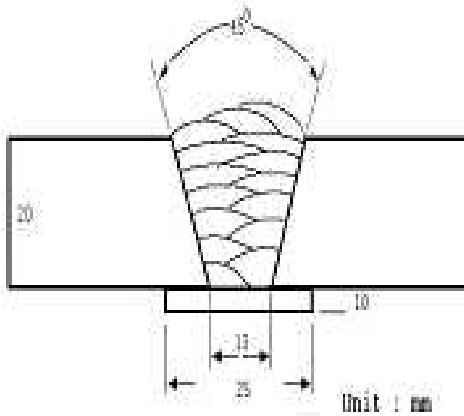
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices.
2. Use Ar+20~25% CO₂



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	: Ar+20%CO ₂
Flow Rate	: 20 ℓ /min
Amp / Volt	: 270~280A / 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)		Remark
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	-40℃ (-40°F)	-51℃ (-60°F)	
SC-71MSR	542(79,000)	577(84,000)	30.0	81(60)	64(47)	As-welded
	523(76,000)	552(80,000)	33.0	57(42)	49(36)	PWHT (620℃x2hr)
AWS A5.20 E71T-12M-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-71MSR	0.06	0.35	1.24	0.012	0.012	0.45
AWS A5.20 E71T-12M-J	≤ 0.12	≤ 0.9	≤ 1.60	≤ 0.03	≤ 0.03	≤ 0.50

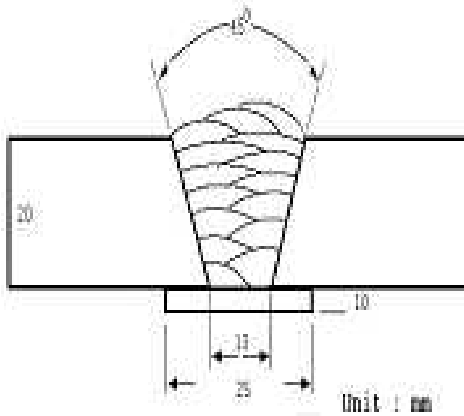
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING 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	: Ar+20%CO ₂
Flow Rate	: 20 ℓ /min
Amp / Volt	: 290~300A / 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)		Remark
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	-40℃ (-40°F)	-51℃ (-60°F)	
SC-71MSR	540(78,000)	570(83,000)	30.5	81(60)	62(46)	As-welded
	525(76,000)	550(80,000)	33.0	59(44)	50(37)	PWHT (620℃x2hr)
AWS A5.20 E71T-12M-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-71MSR	0.06	0.32	1.25	0.012	0.012	0.43
AWS A5.20 E71T-12M-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)			
SC-71MSR 1.2 mm (0.045in)	200	26	10.2 (400)	87~89	3.1 (6.8)
	250	28	11.5 (450)	88~89	4.3 (9.5)
	300	32	15.3 (600)	88~90	5.8 (12.8)
SC-71MSR 1.4 mm (0.052in)	250	28	7.6 (300)	85~87	3.6 (7.9)
	300	32	10.2 (400)	86~88	4.7 (10.3)
	330	36	12.8 (500)	87~89	6.3 (13.9)
Remark				Deposition efficiency =(Deposited metal weight / Wire weight used)×100	Deposition rate =(Deposited metal weight / Welding time,min.)×60

* Shielding Gas :Ar+20%CO₂



Diffusible Hydrogen Content

❖ Welding Conditions

Diameter	: 1.2mm (0.045in)	Amps / Volts	: 230A / 24V
Shielding Gas	: Ar+20%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)

구 분	X1	X2	X3	X4	Avg.
1.2mm (0.045in)	4.3	4.2	4.1	4.6	4.3

Average Hydrogen Content 4.3 ml / 100g Weld Metal



❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia.	
			1.2mm (0.045in)	1.4mm (0.052in)
SC-71MSR	Ar +20%CO ₂	Flat	110~280 Amp	110~280 Amp
		V-up Over head	110~240 Amp	110~260 Amp
		V-down	110~280 Amp	110~280 Amp

❖ AUTHORIZED APPROVAL DETAILS

Welding position	Register of shipping & Size			
	ABS	LR	BV	DNV
All V-down	4Y400SA H5 1.2mm (0.045in)	4Y40S H5 1.2mm (0.045in)	SA4Y40M HHH 1.2mm (0.045in)	IVY40MS H5 1.2mm (0.045in)

❖ F No & A No

F No	A No
6	1