

SC-71MJ

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

2020.12



❖ Specification

<i>AWS A5.20</i>	E71T-9M-J
<i>(AWS A5.20M)</i>	E491T-9M-J)
<i>EN ISO 17632-A</i>	T46 4 P M21 1 H5

❖ Applications

Typical industrial applications include shipbuilding, machinery, bridge, structural fabrication and building

❖ Characteristics on Usage

SC-71MJ is a titania-type flux cored wire to be used with Ar-CO₂ gas mixture shielding. Provide an exceptionally smooth and stable arc with a fast freezing slag system, this wire is ideal for welding flat, vertical up, vertical down.

Bead shape and appearance are excellent in all position welding. It provide excellent notch toughness at low temperature.

❖ Note on Usage

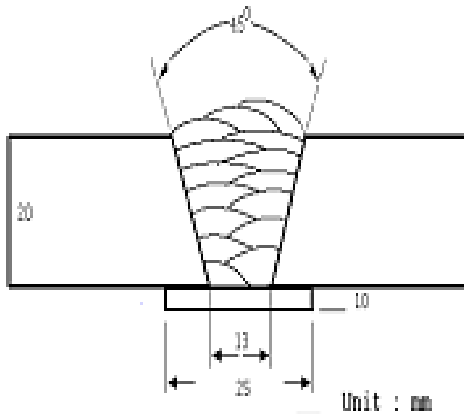
1. Proper preheating(50~150°C, 122~302°F) and interpass temperature must be used in order to release hydrogen which may cause cracking in weld metal when electrodes are used for medium and heavy plates.
2. Use Ar-20~25% CO₂



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%CO₂
- 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)	
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	-29℃ (-20°F)	-40℃ (-40°F)
SC-71MJ	545 (79,000)	583 (85,000)	25.0	126(93)	80(59)
AWS A5.20 E71T-9M-J	≥ 390 (56,000)	490~670 (70,000~97,000)	≥ 22	≥ 27J at -40℃ (≥ 20ft · lbs at -40°F)	

❖ **Chemical Analysis of all weld metal(wt%)**

Consumable	C	Si	Mn	P	S	Ni
SC-71MJ	0.06	0.30	1.10	0.012	0.011	0.42
AWS A5.20 E71T-9M-J	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03	≤ 0.50

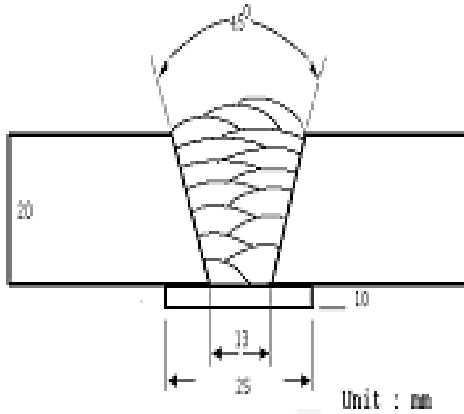
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING 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%CO₂
- 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)	
	YS MPa (lbs/in ²)	TS MPa (lbs/in ²)	EL (%)	-29℃ (-20°F)	-40℃ (-40°F)
SC-71MJ	540 (78,000)	580 (84,000)	25.0	124(91)	80(59)
AWS A5.20 E71T-9M-J	≥ 390 (56,000)	490~670 (70,000~97,000)	≥ 22	≥ 27J at -40℃ (≥ 20ft · lbs at -40°F)	

❖ **Chemical Analysis of all weld metal(wt%)**

Consumable	C	Si	Mn	P	S	Ni
SC-71MJ	0.06	0.32	1.12	0.012	0.011	0.43
AWS A5.20 E71T-9M-J	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03	≤ 0.50

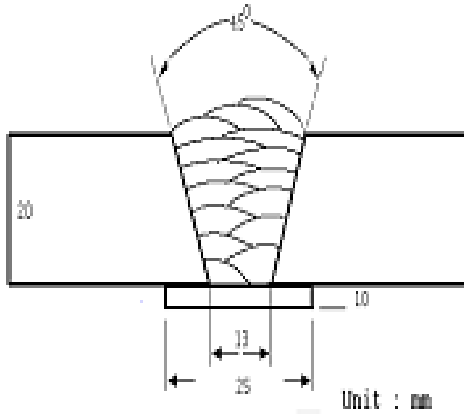
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Mechanical Properties & Chemical Composition of All Weld Metal

❖ **Welding Conditions**

Method by AWS Spec.



[Joint Preparation & Layer Details]

- Welding Position** : 1G(PA)
- Diameter** : 1.6mm (1/16in)
- Shielding Gas** : Ar-20%CO₂
- 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/in ²)	TS MPa (lbs/in ²)	EL (%)	-29℃ (-20°F)	-40℃ (-40°F)
SC-71MJ	545 (79,000)	585 (85,000)	25.5	120(89)	78(58)
AWS A5.20 E71T-9M-J	≥ 390 (56,000)	490~670 (70,000~97,000)	≥ 22	≥ 27J at -40℃ (≥ 20ft · lbs at -40°F)	

❖ **Chemical Analysis of all weld metal(wt%)**

Consumable	C	Si	Mn	P	S	Ni
SC-71MJ	0.06	0.30	1.15	0.012	0.010	0.40
AWS A5.20 E71T-9M-J	≤ 0.12	≤ 0.9	≤ 1.75	≤ 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-71MJ 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-71MJ 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)
SC-71MJ 1.6 mm (1/16in)	280	31	6.4 (250)	86~88	4.0 (8.8)
	330	33	7.6 (300)	86~89	4.6 (10.1)
	350	34	8.1 (320)	87~89	5.6 (12.3)
	400	38	9.2 (360)	88~90	6.5 (14.3)
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 / 25V
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)

	X1	X2	X3	X4	Avg.
1.2mm (0.045in)	3.05	3.11	2.98	2.91	3.01

Average Hydrogen Content 3.01 ml / 100g Weld Metal



❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia.		
			1.2mm (0.045in)	1.4mm (0.052in)	1.6mm (1/16in)
SC-71MJ	Ar - 20%CO ₂	Flat	120~300 Amp	160~350 Amp	180~380 Amp
		V-up Over head	120~260 Amp	140~270 Amp	160~320 Amp
		V-down	140~300 Amp	160~320 Amp	180~360 Amp

❖ F No & A No

F No	A No
6	1