HYUNDAI WELDING

Rev. 05

SC-71MJ

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

2022.02

HYUNDAI WELDING CO., LTD.

SC-71MJ

❖ Specification

AWS A5.20 E71T-9M-J

(AWS A5.20M E491T-9M-J)

EN ISO 17632-A T46 4 P M21 1 H5

AWS D1.8

Wire Dia. mm(in)		
1.2(0.045)	-	1.6(1/16)

* AWS D1.8 is available upon request

❖ 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-CO_2 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

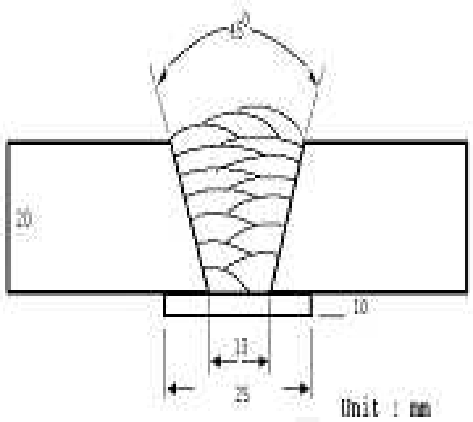
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices.

2. Use Ar-20~25% CO_2

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-25%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)	
	YS MPa (lbs/in²)	TS MPa (lbs/in²)	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)**	

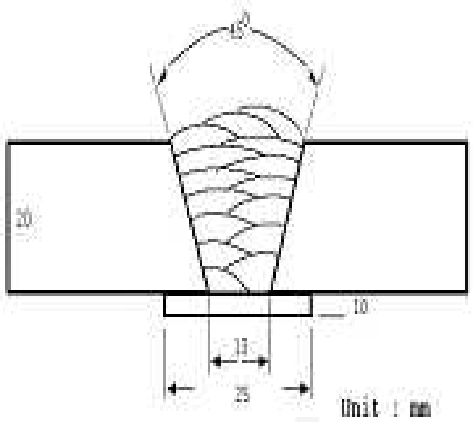
❖ Chemical Analysis of all weld metal(wt%)

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**

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-25%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)	
	YS MPa (lbs/in²)	TS MPa (lbs/in²)	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)**	

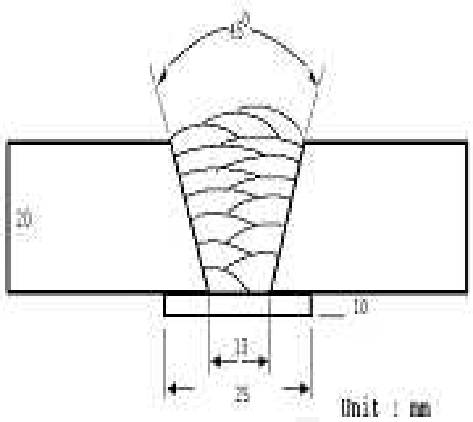
❖ Chemical Analysis of all weld metal(wt%)

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**

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-25%CO_2
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/in²)	TS MPa (lbs/in²)	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**

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-25%CO_2

Diffusible Hydrogen Content

❖ Welding Conditions

Diameter	:	1.2mm (0.045in)	**Amps / Volts**	:	230A / 25V
Shielding Gas	:	Ar-25%CO_2	**Stick-Out**	:	20~25mm (0.79~0.98in)
Flow Rate	:	20 ℓ /min			
Welding Position	:	1G (PA)	**Welding Speed**	:	30 cm/min (12 in/min)
			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	Avg.
1.2mm (0.045in)	3.05	3.11	2.98	2.91	3.01

Average Hydrogen Content 3.01 ㎖ / *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 – 25%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