HYUNDAI WELDING

Rev. 06

SC-71HJ

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

2022.02

HYUNDAI WELDING CO., LTD.

SC-71HJ

❖ Specification

AWS A5.20	E71T-1C,-9C-J
(AWS A5.20M	E491T-1C,-9C-J)
EN ISO 17632-A	T42 4 P C1 1
JIS Z 3313	T 49 4 T1-1 C A

❖ Applications

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

❖ Characteristics on Usage

SC-71HJ is a rutile-type flux cored wire to be used with 100%CO_2 Gas shielding.

Provide an exceptionally smooth and stable arc with a fast freezing slag system, and low spatter levels.

Bead shape and appearance are excellent in all position welding.

❖ Note on Usage

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

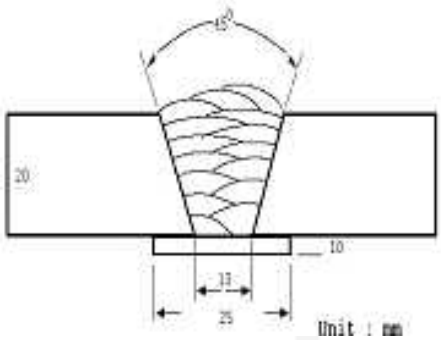
2. Use 100% CO_2 gas.

SC-71HJ

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)	
	YS MPa (lbs/in²)	TS MPa (lbs/in²)	EL (%)	-29℃ (-20°F)	-40℃ (-40°F)
SC-71HJ	560 (81,000)	580 (84,000)	27.5	90 (66)	70 (52)
AWS A5.20 E71T-1C,-9C-J	≥ 390 (56,000)	490~670 (70,000~ 97,000)	≥ 22	≥27J at -40℃ (≥20ft · lbs at -40°F)	

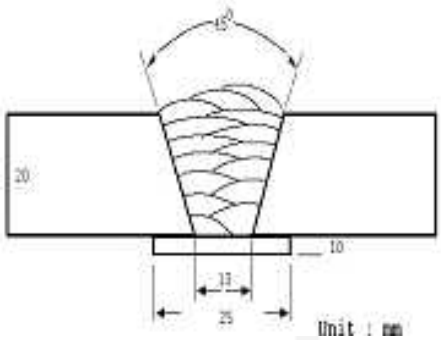
❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni
SC-71HJ	0.04	0.45	1.30	0.008	0.011	0.40
AWS A5.20 E71T-1C,-9C-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	:	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)	
	YS MPa (lbs/in²)	TS MPa (lbs/in²)	EL (%)	-29℃ (-20°F)	-40℃ (-40°F)
SC-71HJ	565 (82,000)	585 (85,000)	27.0	85 (63)	70 (52)
AWS A5.20 E71T-1C,-9C-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-71HJ	0.04	0.40	1.28	0.009	0.012	0.40
AWS A5.20 E71T-1C,-9C-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-71HJ 1.2mm (0.045in)	200	26	10.2 (400)	85~86	3.8 (8.4)
	250	28	11.5 (450)	86~87	5.5 (12.1)
	300	33	15.3 (600)	87~88	6.3 (13.9)
SC-71HJ 1.4mm (0.052in)	250	28	7.6 (300)	85~86	3.5 (7.7)
	300	32	10.2 (400)	87~88	4.9 (10.8)
	330	36	12.8 (500)	87~88	6.0 (13.2)
Remark				Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time,min.)×60

* Shielding Gas : 100%CO_2

Diffusible Hydrogen Content

❖ Welding Conditions

Diameter	:	1.4mm(0.052in)	**Amps(A) / Volts(V)**	:	240A / 27V
Shielding Gas	:	100%CO_2	**Stick-Out(mm)**	:	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
4.5	**4.4**	**4.5**	**4.3**

Average Hydrogen Content 4.4 ㎖ / *100g Weld Metal*

Proper Welding Condition

❖ Proper Current Range

Consumables	Shielding Gas	Welding Position	Wire Dia.		
			1.2mm (0.045in)	1.4mm (0.052in)	1.6mm (1/16in)
SC-71HJ	100%CO2	F & HF	120~300Amp	150~350Amp	180~400Amp
		V-Up & OH	120~260Amp	140~270Amp	160~280mp
		V-Down	200~300Amp	220~320Amp	250~300Amp

Approvals

❖ Shipping Approvals

Welding Position	Register of shipping & Size(mm)					
	KR	ABS	LR	BV	DNV	NK
All V-Down	4Y40SG©H10 1.2~1.4mm (0.045 ~0.052in)	4Y400SAH10 1.2~1.4mm (0.045 ~0.052in)	4Y40S H10 1.2~1.4mm (0.045 ~0.052in)	SA4Y40 HHH 1.2~1.4mm (0.045 ~0.052in)	IVY40MSH10 1.2~1.4mm (0.045 ~0.052in)	KSW54Y40G© H10 1.2~1.4mm (0.045 ~0.052in)

❖ F No & A No

F No	A No
6	1