HYUNDAI WELDING

Rev. 10

SC-71LH

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

2024.12

HYUNDAI WELDING CO., LTD.

SC-71LH

❖ Specification

AWS A5.20	E71T-1C, -9C
(AWS A5.20M	E491T-1C,-9C)
EN ISO 17632-A	T42 2 P C1 1 H5
JIS Z3313	T49 3 T1-1 C A

AWS D1.8

Wire Dia. mm(in)		
1.2(0.045)	1.4(0.052)	1.6(1/16)

* AWS D1.8 is available upon request

❖ Applications

All position welding of machinery, shipbuilding, bridges construction machinery , and vehicles.

❖ Characteristics on Usage

SC-71LH is titania type flux cored wire for all position welding. It has extra low hydrogen levels(H5) and provide an exceptionally smooth and stable arc with a fast freezing slag system.

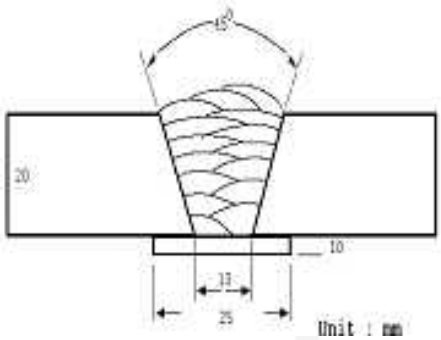
❖ Note on Usage

1. For preheating guidelines, please refer to your local standards and codes relative to your best practices.
2. One-side welding defects such as hot cracking may occur with wrong welding parameter such as high welding speed.
3. Use 100%CO_2 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)	
	YS MPa (lbs/in²)	TS MPa (lbs/in²)	EL (%)	-18℃ (0°F)	-29℃ (-20°F)
SC-71LH	550 (80,000)	590 (86,000)	27.0	90 (66)	70 (52)
AWS A5.20 E71T-1C,-9C	≥ 390 (56,000)	490~670 (70,000~ 97,000)	≥ 22	≥27J at -29℃ (≥20ft · lbs at -20°F)	

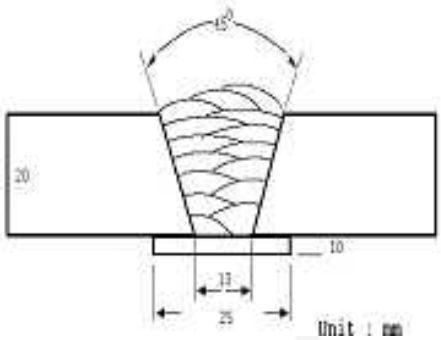
❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
SC-71LH	0.06	0.47	1.35	0.014	0.012
AWS A5.20 E71T-1C,-9C	≤ 0.12	≤ 0.90	≤ 1.75	≤ 0.030	≤ 0.030

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)	
SC-71LH	YS MPa (lbs/in²)	TS MPa (lbs/in²)	EL (%)	-18℃ (0°F)	-29℃ (-20°F)
	538 (78,000)	578 (84,000)	28.0	85 (63)	72 (53)
AWS A5.20 E71T-1C,-9C	≥ 390 (56,000)	490~670 (70,000~ 97,000)	≥ 22	≥27J at -29℃ (≥20ft · lbs at -20°F)	

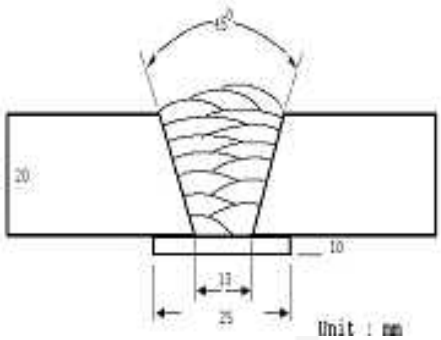
❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
SC-71LH	0.05	0.52	1.35	0.010	0.010
AWS A5.20 E71T-1C,-9C	≤ 0.12	≤ 0.90	≤ 1.75	≤ 0.030	≤ 0.030

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	:	100%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)	
SC-71LH	YS MPa (lbs/in²)	TS MPa (lbs/in²)	EL (%)	-18℃ (0°F)	-29℃ (-20°F)
	538 (78,000)	581 (84,000)	27.5	85 (63)	75 (55)
AWS A5.20 E71T-1C,-9C	**≥ 390 (56,000)**	**490~670 (70,000~ 97,000)**	**≥ 22**	**≥27J at -29℃ (≥20ft · lbs at -20°F)**	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
SC-71LH	0.06	0.49	1.37	0.009	0.011
AWS A5.20 E71T-1C,-9C	**≤ 0.12**	**≤ 0.90**	**≤ 1.75**	**≤ 0.030**	**≤ 0.030**

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- 71LH 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)
SC- 71LH 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)
SC- 71LH 1.6mm (1/16in)	280	31	6.4 (250)	85~88	4.2 (9.2)
	330	33	7.6 (300)	86~88	4.8 (10.6)
	350	34	8.1 (320)	87~89	5.3 (11.7)
	400	38	9.2 (360)	87~90	5.7 (12.5)
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	:	1.2mm (0.045in)	**Amps(A) / Volts(V)**	:	230A / 24V
Shielding Gas	:	100%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(+)

❖ 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
4.2	**4.3**	**4.5**	**4.7**

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

Proper Welding Condition

❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia.		
			1.2mm (0.045in)	1.4mm (0.052in)	1.6mm (1/16in)
SC-71LH	100%CO_2	F & HF	110~280Amp	110~280Amp	120~300Amp
		V-Up & OH	110~240Amp	110~260Amp	120~280mp
		V-Down	110~280Amp	110~280Amp	120~300Amp

Approvals

❖ AUTHORIZED APPROVAL DETAILS

Welding Position	Register of shipping & Size				
	ABS	LR	BV	DNV	NK
All V-Down	3YSA H5 1.2~1.6mm (0.045~1/16in)	3YS H5 1.2~1.6mm (0.045~1/16in)	SA3Y HHH 1.2~1.6mm (0.045~1/16in)	IIIYMS H5 1.2~1.6mm (0.045~1/16in)	KSW53Y40G(C) H5 1.2~1.6mm (0.045~1/16in)

❖ F No & A No

F No	A No
6	1