

# **SC-71LH**

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

2022.02

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**HYUNDAI WELDING CO., LTD.**



## ❖ 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

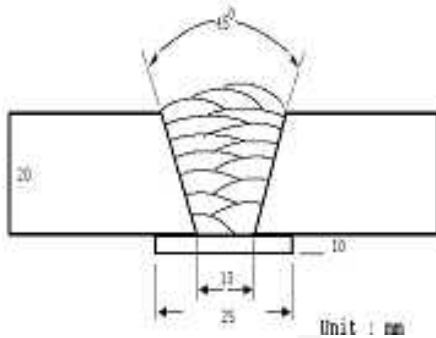
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices.
2. One-side welding defects such as hot cracking may occur with wrong welding parameter such as high welding speed.
3. Use 100%CO<sub>2</sub> gas.



## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Spec.



[ Joint Preparation & Layer Details ]

<b>Welding Position</b>	: 1G(PA)
<b>Diameter</b>	: 1.2mm (0.045in)
<b>Shielding Gas</b>	: 100%CO <sub>2</sub>
<b>Flow Rate</b>	: 20 ℓ /min
<b>Amp./ Volt.</b>	: 280A / 32V
<b>Stick-Out</b>	: 20~25mm (0.79~0.98in)
<b>Pre-Heat</b>	: R.T .
<b>Interpass Temp.</b>	: 150±15℃ (302±59°F)
<b>Polarity</b>	: DC(+)

### ❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test J(ft · lbs)	
	YS MPa (lbs/in <sup>2</sup> )	TS MPa (lbs/in <sup>2</sup> )	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

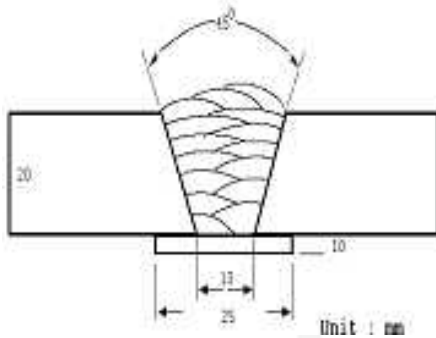
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## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Spec.



[ Joint Preparation & Layer Details ]

<b>Welding Position</b>	: 1G(PA)
<b>Diameter</b>	: 1.4mm (0.052in)
<b>Shielding Gas</b>	: 100%CO <sub>2</sub>
<b>Flow Rate</b>	: 20 ℓ /min
<b>Amp./ Volt.</b>	: 300A / 32V
<b>Stick-Out</b>	: 20~25mm (0.79~0.98in)
<b>Pre-Heat</b>	: R.T .
<b>Interpass Temp.</b>	: 150±15℃ (302±59°F)
<b>Polarity</b>	: DC(+)

### ❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test J(ft · lbs)	
	YS MPa (lbs/in <sup>2</sup> )	TS MPa (lbs/in <sup>2</sup> )	EL (%)	-18℃ (0°F)	-29℃ (-20°F)
SC-71LH	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

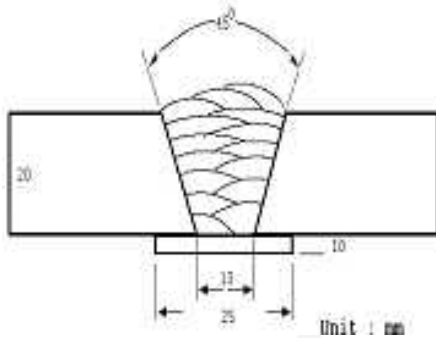
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## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Spec.



[ Joint Preparation & Layer Details ]

<b>Welding Position</b>	: 1G(PA)
<b>Diameter</b>	: 1.6mm (1/16in)
<b>Shielding Gas</b>	: 100%CO <sub>2</sub>
<b>Flow Rate</b>	: 20 ℓ /min
<b>Amp./ Volt.</b>	: 320~330A / 29~30V
<b>Stick-Out</b>	: 20~25mm (0.79~0.98in)
<b>Pre-Heat</b>	: R.T .
<b>Interpass Temp.</b>	: 150±15℃ (302±59°F)
<b>Polarity</b>	: DC(+)

### ❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test J(ft · lbs)	
	YS MPa (lbs/in <sup>2</sup> )	TS MPa (lbs/in <sup>2</sup> )	EL (%)	-18℃ (0°F)	-29℃ (-20°F)
SC-71LH	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

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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)			
<b>SC- 71LH</b>  <b>1.2mm</b> <b>(0.045in)</b>	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)
<b>SC- 71LH</b>  <b>1.4mm</b> <b>(0.052in)</b>	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)
<b>SC- 71LH</b>  <b>1.6mm</b> <b>(1/16in)</b>	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)
<b>Remark</b>				Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time,min.)×60

\* Shielding Gas : 100%CO<sub>2</sub>



## Diffusible Hydrogen Content

### ❖ Welding Conditions

<b>Diameter</b>	: 1.2mm (0.045in)	<b>Amps(A) / Volts(V)</b>	: 240A / 27V
<b>Shielding Gas</b>	: 100%CO <sub>2</sub>	<b>Stick-Out</b>	: 20~25mm (0.79~0.98in)
<b>Flow Rate</b>	: 20 l /min	<b>Welding Speed</b>	: 30 cm/min (12 in/min)
<b>Welding Position</b>	: 1G (PA)	<b>Current Type &amp; Polarity</b>	: DC(+)

### ❖ Gas Chromatography Method

<b>Hydrogen Evolution Time</b>	: 72 hrs
<b>Evolution Temp.</b>	: 45 °C (113°F)
<b>Barometric Pressure</b>	: 780 mm-Hg

### ❖ Result(ml/100g Weld Metal)

X1	X2	X3	X4
3.5	3.4	3.5	3.6

**Average Hydrogen Content** **3.5 ml / 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 <sub>2</sub>	F & HF	120~300Amp	200~350Amp	200~400Amp
		V-Up & OH	120~260Amp	180~280Amp	180~280mp
		V-Down	200~300Amp	220~320Amp	250~320Amp

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# 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

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