

# **SC-71LHM Cored**

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

2022.02

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**HYUNDAI WELDING CO., LTD.**



## SC-71LHM Cored

### ❖ Specification

**AWS A5.20** E71T-1M,-9M

**(AWS A5.20M)** E491T-1M,-9M)

**EN ISO 17632-A** T46 3 P M21 1 H5

**JIS Z3313** T49 3 T1-1 M A-U

### **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

Typical industrial application include shipbuilding, machinery. Bridges and structural fabrications.

### ❖ Characteristics on Usage

SC-71LHM Cored is extra low hydrogen(H5) type flux cored wire for all position welding. Provide an exceptionally smooth and stable arc With a fast freezing slag system.

### ❖ Note on Usage

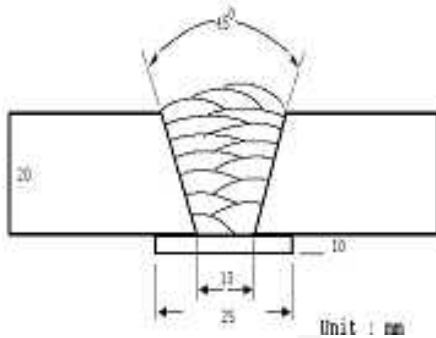
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices.
2. One-side welding defects such as hot cracking may occur with wrong welding parameter such as high welding speed.
3. Use Ar-20~25%CO<sub>2</sub> gas.



## 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>	: Ar-20%CO <sub>2</sub>
<b>Flow Rate</b>	: 20 ℓ /min
<b>Amp / Volt</b>	: 270~280A / 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-71LHM Cored	580 (84,000)	600 (87,000)	28.0	95 (70)	80 (59)
AWS A5.20 E71T1-1M,-9M	≥ 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-71LHM Cored	0.05	0.50	1.20	0.012	0.015
AWS A5.20 E71T1-1M,-9M	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

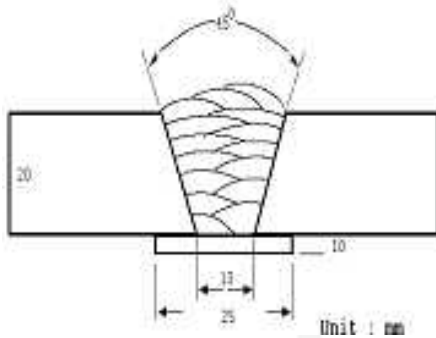
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## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ 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>	: Ar-20%CO <sub>2</sub>
<b>Flow Rate</b>	: 20 ℓ /min
<b>Amp / Volt</b>	: 290~300A / 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-71LHM Cored	580 (84,000)	603 (87,000)	28.3	97 (72)	82 (61)
AWS A5.20 E71T1-1M,-9M	≥ 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-71LHM Cored	0.05	0.50	1.21	0.012	0.015
AWS A5.20 E71T1-1M,-9M	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

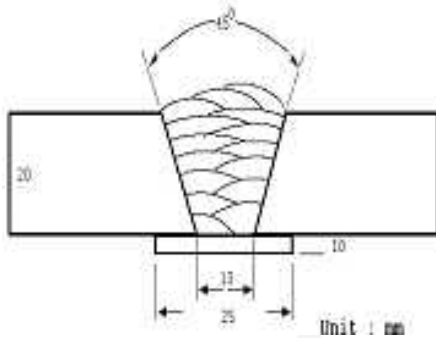
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## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ 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>	: Ar-20%CO <sub>2</sub>
<b>Flow Rate</b>	: 20 ℓ /min
<b>Amp / Volt</b>	: 290~300A / 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-71LHM Cored	582 (84,000)	604 (88,000)	28.1	98 (72)	85 (63)
AWS A5.20 E71T1-1M,-9M	≥ 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-71LHM Cored	0.05	0.50	1.22	0.011	0.015
AWS A5.20 E71T1-1M,-9M	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

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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-71LHM Cored  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-71LHM Cored  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-71LHM Cored  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%CO<sub>2</sub>



## Diffusible Hydrogen Content

### ❖ Welding Conditions

<b>Diameter</b>	: 1.2mm (0.045in)	<b>Amps / Volts</b>	: 230A / 25V
<b>Shielding Gas</b>	: Ar-20%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(+)

### ❖ Hydrogen Analysis Using 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	3.7	3.6

**Average Hydrogen Content 3.6 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-71LHM Cored	Ar -20%CO <sub>2</sub>	F & HF	120~300 Amp	150~350 Amp	150~360 Amp
		V-Up & OH	120~260 Amp	140~270 Amp	150~320 Amp
		V-Down	140~300 Amp	150~320 Amp	150~360 Amp

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## Approvals

### ❖ AUTHORIZED APPROVAL DETAILS

Welding Position	Register of shipping & Size					
	KR	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)	3YMS H5 1.2~1.6mm (0.045~1/16in)	-

### ❖ F No & A No

F No	A No
6	1