

# **SC-70H 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-70H Cored

### ❖ Specification

**AWS A5.20** E70T-1C,-9C

**(AWS A5.20M)** E490T-1C,-9C)

**EN ISO 17632-A** T42 2 R C1 3

**JIS Z 3313** T49 3 T1-0 C A

**AWS D1.8**

Wire Dia. mm(in)			
1.2(0.045)	1.4(0.052)	1.6(1/16)	2.4(3/32)

\* AWS D1.8 is available upon request

### ❖ Applications

H-Fillet welding of building, shipbuilding, bridge, machinery, vehicle using mild and 50kgf/mm<sup>2</sup> class high tensile steels.

### ❖ Characteristics on Usage

SC-70H Cored is widely used metal type flux cored wire for Flat(1G), Horizontal(2G), and H-Fillet(2F) welding with CO<sub>2</sub> shielding gas.

Compared with solid wire, spatter loss is low and bead appearance is beautiful and arc is soft with good stability and high efficiency.

### ❖ Note on Usage

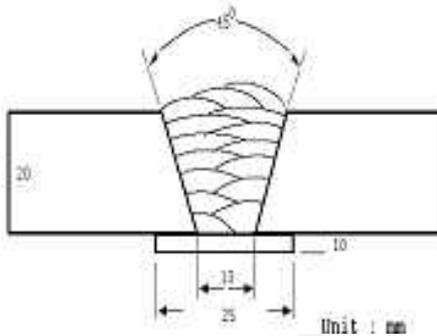
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices
2. Use 100% CO<sub>2</sub> gas.



## 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-70H Cored	520 (75,000)	575 (83,000)	26.2	65 (48)	53 (39)
AWS A5.20 E70T-1C,-9C	≥ 400 (58,000)	490~660 (71,000~ 96,000)	≥ 22	≥ 27J at -29℃ (≥ 20ft · lbs at -20°F)	

### ❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
SC-70H Cored	0.05	0.48	1.42	0.011	0.010
AWS A5.20 E70T-1C,-9C	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

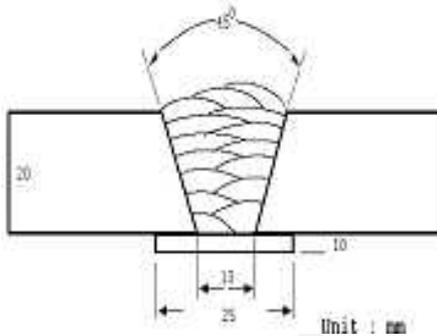
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## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ 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>	: 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-70H Cored	521 (76,000)	575 (83,000)	26.2	67 (49)	55 (41)
AWS A5.20 E70T-1C,-9C	≥ 400 (58,000)	490~660 (71,000~ 96,000)	≥ 22	≥ 27J at -29℃ (≥ 20ft · lbs at -20°F)	

### ❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
SC-70H Cored	0.05	0.52	1.43	0.011	0.010
AWS A5.20 E70T-1C,-9C	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

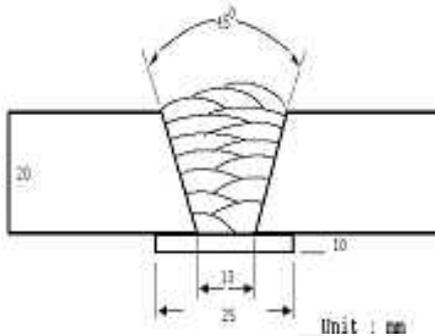
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## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Spec.



[ Joint Preparation & Layer Details ]

<b>Welding Position</b>	: 1G(PA)
<b>Diameter</b>	: 1.6mm (1/16in)
<b>Shielding Gas</b>	: 100%CO <sub>2</sub>
<b>Flow Rate</b>	: 20 ℓ /min
<b>Amp./ Volt.</b>	: 330A/ 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-70H Cored	525 (76,000)	578 (84,000)	26.2	68 (50)	50 (37)
AWS A5.20 E70T-1C,-9C	≥ 400 (58,000)	490~660 (71,000~ 96,000)	≥ 22	≥ 27J at -29℃ (≥ 20ft · lbs at -20°F)	

### ❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
SC-70H Cored	0.05	0.55	1.45	0.011	0.010
AWS A5.20 E70T-1C,-9C	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

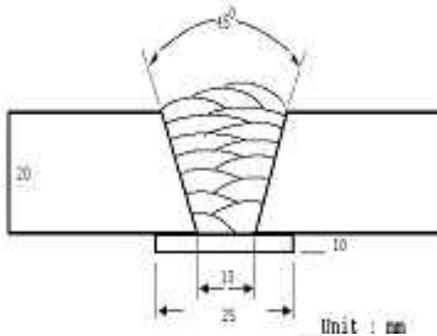
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## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Spec.



[ Joint Preparation & Layer Details ]

<b>Welding Position</b>	: 1G(PA)
<b>Diameter</b>	: 2.0mm (5/64in)
<b>Shielding Gas</b>	: 100%CO <sub>2</sub>
<b>Flow Rate</b>	: 20 ℓ /min
<b>Amp./ Volt.</b>	: 330A / 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-70H Cored	540 (78,000)	578 (84,000)	26.2	62 (46)	52 (38)
AWS A5.20 E70T-1C,-9C	≥ 400 (58,000)	490~660 (71,000~ 96,000)	≥ 22	≥ 27J at -29℃ (≥ 20ft · lbs at -20°F)	

### ❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
SC-70H Cored	0.05	0.43	1.35	0.013	0.010
AWS A5.20 E70T-1C,-9C	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

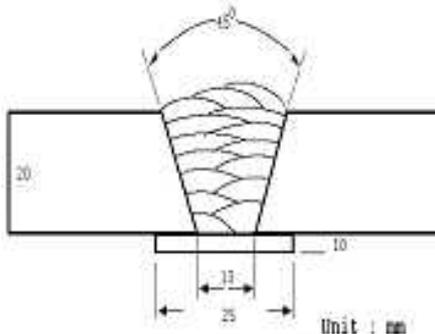
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## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Spec.



[ Joint Preparation & Layer Details ]

<b>Welding Position</b>	: 1G(PA)
<b>Diameter</b>	: 2.4mm (3/32in)
<b>Shielding Gas</b>	: 100%CO <sub>2</sub>
<b>Flow Rate</b>	: 20 ℓ /min
<b>Amp./ Volt.</b>	: 330A / 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-70H Cored	552 (80,000)	612 (89,000)	26.2	58 (42)	45 (33)
AWS A5.20 E70T-1C,-9C	≥ 400 (58,000)	490~660 (71,000~ 96,000)	≥ 22	≥ 27J at -29℃ (≥ 20ft · lbs at -20°F)	

### ❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S
SC-70H Cored	0.05	0.42	1.30	0.014	0.010
AWS A5.20 E70T-1C,-9C	≤ 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-70H Cored	250	30	6.3 (250)	87~89	2.9(6.4)
1.2 mm (0.045in)	300	32	7.7 (300)	91~93	3.6(7.9)
SC-70H Cored	300	32	7.6 (300)	90~92	5.1(11.2)
1.4 mm (0.052in)	350	36	10.2 (400)	91~93	5.8(12.8)
SC-70H Cored	300	31	7.4 (290)	90~92	4.9(10.8)
1.6 mm (1/16in)	350	36	8.9 (350)	91~93	5.8(12.8)
	400	36	10.4 (410)	91~93	6.5(14.3)
SC-70H Cored	350	33	4.3(170)	85~86	4.4(9.7)
2.0 mm (5/64in)	400	34	6.2(240)	86~87	6.0(13.2)
	450	36	7.3(290)	88~89	7.3(16.1)
SC-70H Cored	400	33	3.8(150)	88~89	5.2(11.4)
2.4 mm (3/32in)	450	34	5.0(200)	88~89	7.1(15.6)
	500	35	5.9(230)	87~88	8.3(18.3)
Remark				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>

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## Diffusible Hydrogen Content

### ❖ Welding Conditions

<b>Diameter</b>	: 2.4(3/32in)	<b>Amps(A) / Volts(V)</b>	: 380A / 34V
<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 (12in/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
6.8	6.5	6.4	6.5

**Average Hydrogen Content 6.6 ml / 100g Weld Metal**



## Proper Welding Condition

### ❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia.		
			1.6mm (1/16in)	2.0mm (5/64in)	2.4mm (3/32in)
SC-70H Cored	100%CO <sub>2</sub>	F ,H ,HF (1G,2G,2F)	300~400Amp	350~450Amp	400~500mp

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## Approvals

### ❖ Shipping Approvals

Welding Position	Resister of shipping & Size mm(in)						
	KR	ABS	LR	BV	DNV	GL	NK
F	-	3YSAH10 1.6~2.4 (1/16~3/32)	3YSH10 1.6~2.4 (1/16~3/32)	-	-	3YH10S 1.6~2.4 (1/16~3/32)	-

### ❖ F No & A No

F No	A No
6	1