

# **SC-70A**

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



## ❖ Specification

<b>AWS A5.36</b>	E70T15-C1A0-CS1 E70T15-M21A2-CS1
<b>EN ISO 17632-A</b>	T 42 2 M C 1 H5 T 46 3 M M 1 H5

## ❖ Applications

SC-70A is used for welding in shipbuilding, machinery, bridge Construction, structural fabrication, automated or robotic welding.

## ❖ Characteristics on Usage

SC-70A is a metal-cored wire which combines the high deposition rates of a flux cored wire with the high efficiencies of a solid wire. It provides minimized slag coverage so it can be performed multi-pass welding without slag removal

## ❖ Note on Usage

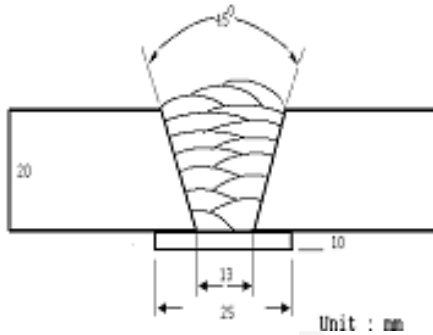
1. Proper preheating(50~150℃) and interpass temperature must be used in order to release hydrogen which may cause cracking in weld metal when electrodes are used for medium and heavy plates
2. Use 100% CO<sub>2</sub> or Ar + 20-25% CO<sub>2</sub> gas.



## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Spec.



[ Joint Preparation & Layer Details ]

<b>Diameter(mm)</b>	: 1.2mm
<b>Shielding Gas</b>	: 100%CO <sub>2</sub>
<b>Flow Rate(ℓ /min.)</b>	: 20
<b>Amp./ Volt.</b>	: 280 / 32
<b>Stick-Out(mm)</b>	: 20~25
<b>Pre-Heat(℃)</b>	: R.T .
<b>Interpass Temp.(℃)</b>	: 150±15
<b>Polarity</b>	: DC(+)

### ❖ Mechanical Properties of the weld metal

Consumable	Tensile Test			CVN Impact Test (Joule)
	YS(MPa)	TS(MPa)	EL.(%)	-20℃
SC-70A	520	590	27.0	50
AWS A5.36 E70T15-C1A0-CS1	≥ 400	≥ 480	≥ 22	≥27J at -20℃

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

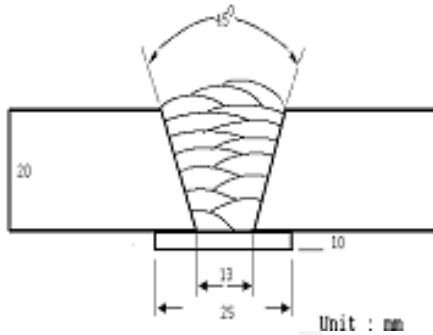
Consumable	C	Si	Mn	P	S
SC-70A	0.06	0.40	1.40	0.011	0.008
AWS A5.36 E70T15-C1A0-CS1	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03



## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Spec.



[ Joint Preparation & Layer Details ]

<b>Diameter(mm)</b>	: 1.2mm
<b>Shielding Gas</b>	: 80%Ar + 20%CO <sub>2</sub>
<b>Flow Rate(ℓ /min.)</b>	: 20
<b>Amp./ Volt.</b>	: 280 / 30
<b>Stick-Out(mm)</b>	: 20~25
<b>Pre-Heat(°C)</b>	: R.T .
<b>Interpass Temp.(°C)</b>	: 150±15
<b>Polarity</b>	: DC(+)

### ❖ Mechanical Properties of the weld metal

Consumable	Tensile Test			CVN Impact Test (Joule)
	YS(MPa)	TS(MPa)	EL.(%)	-30°C
SC-70A	550	620	27.0	60
AWS A5.36 E70T15-M21A2-CS1	≥ 400	≥ 480	≥ 22	≥ 27J at -30°C

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

Consumable	C	Si	Mn	P	S
SC-70A	0.06	0.55	1.55	0.010	0.009
AWS A5.36 E70T15-M21A2-CS1	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03



## Diffusible Hydrogen Content

### ❖ Welding Conditions

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<b>Diameter(mm)</b>	: 1.2	<b>Amps(A) / Volts(V)</b>	: 280 / 30
<b>Shielding Gas</b>	: 80%Ar +20%CO <sub>2</sub>	<b>Stick-Out(mm)</b>	: 20~25
<b>Flow Rate(ℓ /min.)</b>	: 20	<b>Welding Speed</b>	: 30 cpm
<b>Welding Position</b>	: 1G	<b>Current Type &amp; Polarity</b>	: DC(+)

### ❖ Hydrogen Analysis Using Gas Chromatography Method

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

### ❖ Result(ml/100g Weld Metal)

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X1	X2	X3	X4
3.8	4.0	4.2	4.3

**Average Hydrogen Content** **4.1 ml / 100g Weld Metal**



# Welding Efficiency

## ❖ Deposition Rate & Efficiency

Shielding Gas	Welding Conditions		Deposition Efficiency(%)	Deposition Rate(kg/hr)
	Amp.(A)	Volt.(V)		
100% CO <sub>2</sub>	200	25	91~93	2.6
	250	29	92~94	4.0
	300	32	93~95	5.4
	350	34	94~96	6.8
80%Ar+20% CO <sub>2</sub>	200	24	92~94	2.7
	250	28	93~95	4.2
	300	31	95~97	5.7
	350	33	95~98	7.2
<b>Remark</b>			Deposition efficiency =(Deposited metal weight/ Wire weight used)×100	Deposition rate =(Deposited metal weight/ Welding time,min.)×60



## Proper Welding Condition

### ❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia.(mm)		
			1.2mm	1.4mm	1.6mm
SC-70A	100%CO <sub>2</sub> or 80%Ar+20%CO <sub>2</sub>	F & HF	230~300Amp	260~330Amp	290~360Amp
		V-Up	160~200Amp	170~210Amp	180~220Amp
		O.H.	160~200Amp	170~210Amp	180~220Amp



## Approvals

### ❖ Shipping Approvals

Shielding Gas	Resister of shipping & Size(mm)			
	ABS	TUV	DB	CE
100%CO <sub>2</sub> 80%Ar+20%CO <sub>2</sub>	3YSAH5 1.2~1.6	12079.01 1.2~1.6	42.115.05 1.2~1.6	HWK-300-00 1.2~1.6