

# SM-70

GAS METAL ARC WELDING CONSUMABLES  
FOR WELDING OF Mild & 490Mpa CLASS  
HIGH TENSILE STEEL

2010. 4



## ❖ Specification

*AWS A5.18*

**ER70S-6**

*EN ISO 14341-A*

**G 42 2 C G3Si1**

**G 42 3 M G3Si1**

## ❖ Applications

Butt and fillet welding of vehicles, buildings, ships, machinery and bridge

## ❖ Characteristics on Usage

SM-70 is a solid wire designed for all position welding by short-circuiting type transfer. As the deposition efficiency is high and penetration is deep, highly efficient welding can be performed.

## ❖ Note on Usage

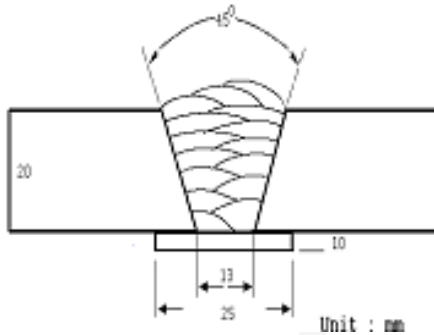
1. Use with CO<sub>2</sub> / Argon + 15~25% CO<sub>2</sub> gas.
2. Flow quantity of shielding gas should be 25ℓ/min. approximately.
3. Use wind screen against wind.
4. Keep distance between tip and base metal 6~15mm for less than 250A, and 15~25mm for more than 250A of welding current.



## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Rules



[ Joint Preparation & Layer Details ]

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

### ❖ Mechanical Properties of the weld metal

Brand Name	Tensile Test Results			Charpy V-Notch Impact Value (Joules)	
	Y.S.(MPa)	T.S.(MPa)	EL.(%)	0 °C	-30 °C
SM-70	454	540	28.5	140	110
AWS A5.18 ER70S-6	≥ 400	≥ 480	≥ 22	≥ 27J at -30 °C	

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

Brand Name	C	Si	Mn	P	S
SM-70	0.07	0.45	0.96	0.015	0.008
AWS A5.18 ER70S-6	≤ <b>0.12</b>	≤ <b>0.9</b>	≤ <b>1.75</b>	≤ <b>0.03</b>	≤ <b>0.03</b>

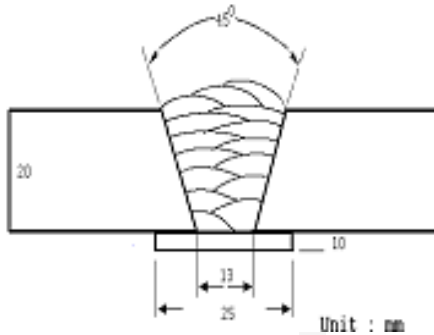
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING CO., LTD. affect the results obtained in applying this type of information. These variables include, but are not limited to, welding procedure, shielding gas, plate chemistry and temperature, weldment design, fabrication methods and service requirements.



**Mechanical Properties  
& Chemical Composition of All Weld Metal**

❖ **Welding Conditions**

Method by AWS Rules



[ Joint Preparation & Layer Details ]

<b>Diameter(mm)</b>	: <b>1.2mm</b>
<b>Shielding Gas</b>	: <b>Ar + 20%CO<sub>2</sub></b>
<b>Flow Rate(ℓ /min.)</b>	: 20
<b>Amp./ Volt.</b>	: 280 / 30
<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**

Brand Name	Tensile Test Results			Charpy V-Notch Impact Value (Joules)	
	Y.S.(MPa)	T.S.(MPa)	EL.(%)	0℃	-30℃
<b>SM-70</b>	470	550	28.0	151	105
<b>AWS A5.18 ER70S-6</b>	≥ 400	≥ 480	≥ 22	≥ 27J at -30℃	

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

Brand Name	C	Si	Mn	P	S
<b>SM-70</b>	0.06	0.50	1.10	0.016	0.008
<b>AWS A5.18 ER70S-6</b>	≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

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## Proper Welding Condition

### ❖ Proper Current Range

Brand Name	Welding Position	Wire Dia. (mm)		
		1.2mm	1.4mm	1.6mm
SM-70	F & HF	150~330Amp	200~430Amp	200~480Amp
	Vertical Up	150~220Amp	180~240Amp	-
	Over Head	-	-	-

### ❖ Hydrogen Analysis Using Gas Chromatograph Method

Hydrogen Evolution Time	: 72 hrs	Analysis Temp.	: 25 °C
Evolution Temp.	: 25 °C	Exposure Condition	: 80%RH- 25 °C
Barometric Pressure	: 780 mm- Hg		

### ❖ Result(*ml*/100g Weld Metal)

X1	X2	X3	X4
1.4	1.6	1.5	1.7

**Average Hydrogen Content  $1.55 \text{ ml} / 100\text{g Weld Metal}$**

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## **Chemical Composition of Wire**

### **❖ Chemical Composition of Wire (Wt%)**

Brand Name	C	Si	Mn	P	S	Cu
SM-70	0.06	0.83	1.48	0.013	0.011	0.10
AWS A5.18 ER70S-6	0.06~0.15	0.80~1.15	1.40~1.85	≤ 0.025	≤ 0.035	≤ 0.50

### **Notice**

***This test report is made for giving general information,  
and it's not meaning guarantee.  
Test results are changeable by several welding  
- parameter including base materials***