

# **SM-70**

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

2021.03



## ❖ Specification

**AWS A5.18**

ER70S-6

**EN ISO 14341-A**

G 42 2 C1 3Si1

G 42 5 M21 3Si1

## ❖ 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

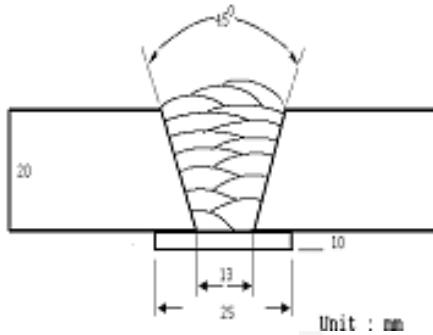
1. Use with CO<sub>2</sub> / Argon + 15~25% CO<sub>2</sub> gas.
2. Flow quantity of shielding gas should be 25ℓ/min. approximately.
3. Use wind screen against wind.
4. Keep distance between tip and base metal 6~15mm for less than 250A, and 15~25mm for more than 250A of welding current.



## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Rules



[ Joint Preparation & Layer Details ]

Diameter(mm)	: 1.2mm (0.045in)
Shielding Gas	: 100%CO <sub>2</sub>
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	: DCEP

### ❖ Mechanical Properties of the weld metal

Brand Name	Tensile Test Results			Charpy V-Notch Impact Value J (ft . lbs)	
	Y.S. MPa(ksi)	T.S. MPa(ksi)	EL.(%)	0°C (32°F)	-30°C (-22°F)
SM-70	467 (67.7)	566 (82.1)	27.8	121 (89)	71 (52)
AWS A5.18 ER70S-6	≥ 400	≥ 480	≥ 22	≥27J at -30°C	

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

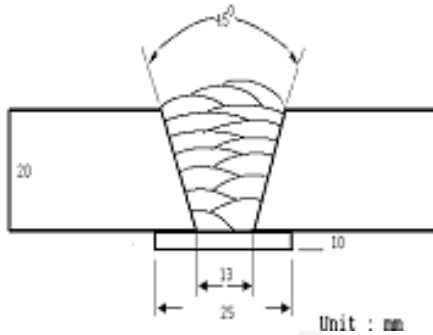
Brand Name	C	Si	Mn	P	S
SM-70	0.07	0.58	1.15	0.010	0.010
AWS A5.18 ER70S-6	No Spec.				



## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Rules



[ Joint Preparation & Layer Details ]

<b>Diameter(mm)</b>	: 1.2mm (0.045in)
<b>Shielding Gas</b>	: 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(℃)</b>	: R.T .
<b>Interpass Temp.(℃)</b>	: 150±15
<b>Polarity</b>	: DCEP

### ❖ Mechanical Properties of the weld metal

Brand Name	Tensile Test Results			Charpy V-Notch Impact Value J (ft . lbs)	
	Y.S. MPa(ksi)	T.S. MPa(ksi)	EL.(%)	0℃ (32°F)	-30℃ (-22°F)
SM-70	472 (68.5)	569 (82.5)	26.4	137 (101)	88 (65)
AWS A5.18 ER70S-6	≥ 400	≥ 480	≥ 22	≥27J at -30℃	

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

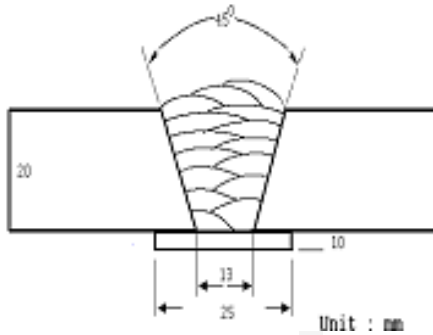
Brand Name	C	Si	Mn	P	S
SM-70	0.07	0.64	1.24	0.010	0.010
AWS A5.18 ER70S-6	No Spec.				



## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Rules



[ Joint Preparation & Layer Details ]

Diameter(mm)	: 1.0mm (0.039in)
Shielding Gas	: 100%CO <sub>2</sub>
Flow Rate(ℓ /min.)	: 20
Amp./ Volt.	: 240 / 28
Stick-Out(mm)	: 15~20
Pre-Heat(°C)	: R.T .
Interpass Temp.(°C)	: 150±15
Polarity	: DCEP

### ❖ Mechanical Properties of the weld metal

Brand Name	Tensile Test Results			Charpy V-Notch Impact Value J (ft . lbs)	
	Y.S. MPa(ksi)	T.S. MPa(ksi)	EL.(%)	0°C (32°F)	-30°C (-22°F)
SM-70	488 (70.8)	584 (84.7)	25.8	110 (81.1)	67 (49.4)
AWS A5.18 ER70S-6	≥ 400	≥ 480	≥ 22	≥ 27J at -30°C	

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

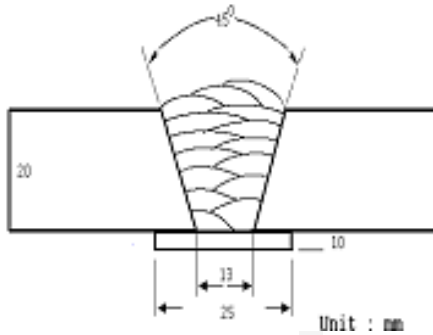
Brand Name	C	Si	Mn	P	S
SM-70	0.08	0.83	1.23	0.015	0.015
AWS A5.18 ER70S-6	No Spec.				



## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Rules



[ Joint Preparation & Layer Details ]

Diameter(mm)	: 1.0mm (0.039in)
Shielding Gas	: Ar + 20%CO <sub>2</sub>
Flow Rate(ℓ /min.)	: 20
Amp./ Volt.	: 240 / 26
Stick-Out(mm)	: 15~20
Pre-Heat(°C)	: R.T .
Interpass Temp.(°C)	: 150±15
Polarity	: DCEP

### ❖ Mechanical Properties of the weld metal

Brand Name	Tensile Test Results			Charpy V-Notch Impact Value J (ft . lbs)	
	Y.S. MPa(ksi)	T.S. MPa(ksi)	EL.(%)	0°C (32°F)	-30°C (-22°F)
SM-70	486 (70.5)	590 (85.6)	26.0	122 (90.0)	72 (53.1)
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	0.08	0.74	1.31	0.018	0.017
AWS A5.18 ER70S-6	No Spec.				



## Chemical Composition of Wire

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

Brand Name	C	Si	Mn	P	S	Cu
SM-70	0.08	0.80	1.52	0.015	0.010	0.21
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***