**HYUNDAI**
**WELDING**

# SM-70EN

GAS METAL ARC WELDING CONSUMABLES
FOR NON-ALLOY AND FINE-GRAIN STEELS

## HYUNDAI WELDING CO., LTD.

## ❖ Specification

| | |
|---|---|
| *AWS A5.18* | ER70S-6 |
| *EN ISO 14341-A* | G 42 2 C G4Si1<br>G 46 4 M G4Si1 |

## ❖ Applications

Butt and fillet welding of steel structures such as vehicles, machinery and bridges.

## ❖ Characteristics on Usage

SM-70EN is a solid wire 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 $CO_2$ / Argon + 15~25% $CO_2$ 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.

# SM-70EN

## Mechanical Properties & Chemical Composition of All Weld Metal

❖ **Welding Conditions**                              **Method by AWS Rules**
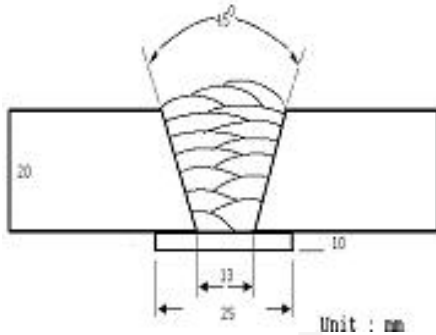


[ Joint Preparation & Layer Details ]

| | |
|---|---|
| **Diameter(mm)** | : 1.2mm (0.045in) |
| **Shielding Gas** | : 100%$CO_2$ |
| **Flow Rate(ℓ/min.)** | : 20 |
| **Amp./ Volt.** | : 280 / 32 |
| **Stick-Out(mm)** | : 20~25 |
| **Pre-Heat(℃)** | : R.T . |
| **Interpass Temp.(℃)** | : 150±15 |
| **Polarity** | : DC(+) |

❖ **Mechanical Properties of the weld metal**

| Brand Name | Tensile Test Results | | | Charpy V-Notch Impact Value J (ft . lbs) | |
|---|---|---|---|---|---|
| **SM-70EN** | **Y.S. MPa(ksi)** | **T.S. MPa(ksi)** | **EL.(%)** | **−20℃(−4°F)** | **−30℃(−22°F)** |
| | 461 (66.9) | 560 (81.2) | 29 | 95 (70) | 55 (41) |
| **EN ISO 14341−A G 42 2 C G4Si1** | **≥ 420** | **500~640** | **≥ 20** | **≥47J at −20℃** | |

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

| Brand Name | C | Si | Mn | P | S |
|---|---|---|---|---|---|
| **SM-70EN** | 0.09 | 0.56 | 1.06 | 0.015 | 0.012 |

# 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** | : Ar + 20%$CO_2$ |
| **Flow Rate(ℓ/min.)** | : 20 |
| **Amp./ Volt.** | : 280 / 30 |
| **Stick-Out(mm)** | : 20~25 |
| **Pre-Heat(℃)** | : R.T . |
| **Interpass Temp.(℃)** | : 150±15 |
| **Polarity** | : DC(+) |

## ❖ Mechanical Properties of the weld metal

| Brand Name | Tensile Test Results | | | Charpy V-Notch Impact Value J (ft . lbs) | |
|---|---|---|---|---|---|
| **SM-70EN** | **Y.S. MPa(ksi)** | **T.S. MPa(ksi)** | **EL.(%)** | **−20℃(−4°F)** | **−30℃(−22°F)** |
| | 524 (76.0) | 617 (89.5) | 27.0 | 109 (80) | 89 (66) |
| **EN ISO 14341−A G 46 4 M G4Si1** | ≥ 460 | 530~680 | ≥ 20 | ≥47J at −40℃ | |

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

| Brand Name | C | Si | Mn | P | S |
|---|---|---|---|---|---|
| **SM-70EN** | 0.09 | 0.68 | 1.26 | 0.015 | 0.012 |

# Proper Welding Condition

## ❖ Proper Current Range

| Brand Name | Welding Position | Wire Dia. (mm) | | |
|---|---|---|---|---|
| | | 1.2mm (0.045in) | 1.4mm (0.052in) | 1.6mm (1/16in) |
| SM-70EN | F & HF | 150~330Amp | 200~430Amp | 200~480Amp |
| | Vertical Up | 150~220Amp | 180~240Amp | - |

# Chemical Composition of Wire

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

| Brand Name | C | Si | Mn | P | S |
|---|---|---|---|---|---|
| SM-70EN | 0.076 | 0.95 | 1.65 | 0.019 | 0.015 |
| EN ISO 14341-A G4Si1 | 0.06~0.14 | 0.80~1.20 | 1.60~1.90 | ≤ 0.025 | ≤ 0.035 |

## 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*