

SC-70T Cored

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

2022.02

HYUNDAI WELDING CO., LTD.



SC-70T Cored

❖ Specification

| | |
|-----------------------|------------------------------------|
| AWS A5.18 | E70C-3C,-6M |
| (AWS A5.18M) | E48C-3C/-6M) |
| EN ISO 17632-A | T42 2 M C1 1, T46 2 M M21 1 |
| JIS Z3313 | T49 2 T15-1 C A T49 3 T15-1 M A |

❖ Applications

SC-70T Cored is ideally suited for thin plate welding and root pass welding of structure . And it is designed for high production and automatic applications where large amount of filler metal can be deposited with a minimum amount slag & spatter typical industrial applications including shipbuilding, machinery, bridge, structural fabrication and building

❖ Characteristics on Usage

SC-70T Cored 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 has excellent arc stability and negligible spatter level at not only high current but also low current (down to 50Amp) And it provides minimized slag coverage so it can be performed multi-pass welding without slag removal

❖ Note on Usage

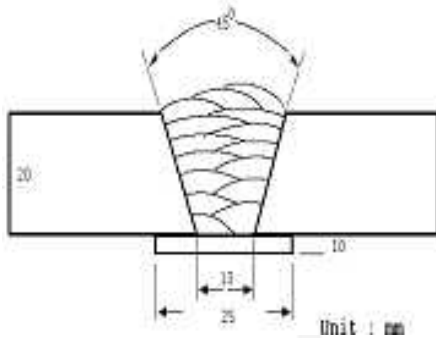
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices
2. Use 100% CO₂ or Ar + 20-25% CO₂ gas.



Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

| | |
|-------------------------|-------------------------|
| Welding Position | : 1G(PA) |
| Diameter | : 1.2mm (0.045in) |
| Shielding Gas | : 100%CO ₂ |
| Flow Rate | : 20 ℓ /min |
| Amp./ Volt. | : 280A / 32V |
| Stick-Out | : 20~25mm (0.79~0.98in) |
| Pre-Heat | : R.T . |
| Interpass Temp. | : 150±15℃ (302±59°F) |
| Polarity | : DC(+) |

❖ Mechanical Properties of the weld metal

| Consumable | Tensile Test | | | CVN Impact Test J(ft · lbs) | |
|----------------------|----------------------------------|----------------------------------|-----------|--|-----------------|
| | YS MPa (lbs/in ²) | TS MPa (lbs/in ²) | EL (%) | -18℃ (0°F) | -29℃ (-20°F) |
| SC-70T Cored | 473 (69,000) | 551 (80,000) | 29.2 | 69 (51) | 53 (39) |
| AWS A5.18 E70C-3C | ≥ 400 (58,000) | ≥ 480 (70,000) | ≥ 22 | ≥ 27J at -18℃ (≥ 20ft · lbs at 0°F) | |

❖ Chemical Analysis of the weld metal(wt%)

| Consumable | C | Si | Mn | P | S |
|----------------------|--------|-------|--------|--------|--------|
| SC-70T Cored | 0.060 | 0.60 | 1.20 | 0.011 | 0.014 |
| AWS A5.18 E70C-3C | ≤ 0.12 | ≤ 0.9 | ≤ 1.75 | ≤ 0.03 | ≤ 0.03 |

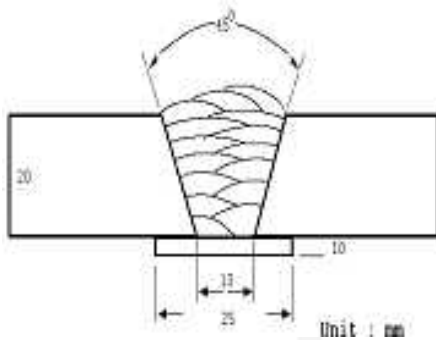
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING 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 Spec.



[Joint Preparation & Layer Details]

| | |
|-------------------------|------------------------------|
| Welding Position | : 1G(PA) |
| Diameter | : 1.2mm (0.045in) |
| Shielding Gas | : 80%Ar + 20%CO ₂ |
| Flow Rate | : 20 ℓ /min |
| Amp./ Volt. | : 280A / 30V |
| Stick-Out | : 20~25mm (0.79~0.98in) |
| Pre-Heat | : R.T . |
| Interpass Temp. | : 150±15℃ (302±59°F) |
| Polarity | : DC(+) |

❖ Mechanical Properties of the weld metal

| Consumable | Tensile Test | | | CVN Impact Test J(ft · lbs) | |
|----------------------|----------------------------------|----------------------------------|-----------|--|-----------------|
| | YS MPa (lbs/in ²) | TS MPa (lbs/in ²) | EL (%) | -18℃ (0°F) | -29℃ (-20°F) |
| SC-70T Cored | 552 (80,000) | 598 (87,000) | 27.1 | 97 (72) | 65 (48) |
| AWS A5.18 E70C-6M | ≥ 400 (58,000) | ≥ 480 (70,000) | ≥ 22 | ≥ 27J at -29℃ (≥ 20ft · lbs at -20°F) | |

❖ Chemical Analysis of the weld metal(wt%)

| Consumable | C | Si | Mn | P | S |
|----------------------|--------|-------|--------|--------|--------|
| SC-70T Cored | 0.072 | 0.65 | 1.45 | 0.010 | 0.011 |
| AWS A5.18 E70C-6M | ≤ 0.12 | ≤ 0.9 | ≤ 1.75 | ≤ 0.03 | ≤ 0.03 |

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Diffusible Hydrogen Content

❖ Welding Conditions

| | | | |
|-------------------------|-----------------------------|------------------------------------|----------------------------|
| Diameter | : 1.2mm (0.045in) | Amps / Volts | : 280A / 30V |
| Shielding Gas | : 80%Ar +20%CO ₂ | Stick-Out | : 20~25mm (0.79~0.98in) |
| Flow Rate | : 20 ℓ /min | Welding Speed | : 30 cm/min (12 in/min) |
| Welding Position | : 1G (PA) | Current Type & Polarity | : DC(+) |

❖ Hydrogen Analysis Using Gas Chromatography Method

| | |
|--------------------------------|-----------------|
| Hydrogen Evolution Time | : 72 hrs |
| Evolution Temp. | : 45 °C (113°F) |
| Barometric Pressure | : 780 mm-Hg |

❖ Result(ml/100g Weld Metal)

| X1 | X2 | X3 | X4 |
|-----|-----|-----|-----|
| 4.0 | 3.6 | 4.1 | 3.8 |

Average Hydrogen Content 3.9 ml / 100g Weld Metal



Welding Efficiency

❖ Deposition Rate & Efficiency

| Shielding Gas | Welding Conditions | | Wire Feed Speed m/min (in/min) | Deposition Efficiency(%) | Deposition Rate kg/hr(lb/hr) |
|--|--------------------|----------|-----------------------------------|---|---|
| | Amp.(A) | Volt.(V) | | | |
| 1.2mm (0.045in) 100% CO ₂ | 80 | 17 | 2.4(90) | 90~92 | 0.8(1.8) |
| | 160 | 23 | 4.8(190) | 91~93 | 2.8(6.2) |
| | 250 | 28 | 9.8(390) | 92~94 | 4.0(8.8) |
| | 330 | 31 | 15.2(600) | 94~96 | 6.8(15.0) |
| 1.2mm (0.045in) 80%Ar+20% CO ₂ | 200 | 24 | 7.4(290) | 92~94 | 2.7(5.9) |
| | 250 | 28 | 9.8(390) | 93~95 | 4.2(9.2) |
| | 300 | 31 | 12.7(500) | 95~97 | 5.7(12.5) |
| Remark | | | | Deposition efficiency =(Deposited metal weight/ Wire weight used)×100 | Deposition rate =(Deposited metal weight/ Welding time,min.)×60 |

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Proper Welding Condition

❖ Welding Conditions

| Wire Size | Shielding Gas | Thick.of Base metal(mm) | Welding Position | Proper Range of Amp. | Optimum |
|--------------------|---|-------------------------|------------------|----------------------|-------------|
| 1.2mm (0.045in) | 100%CO ₂ or 80%Ar+20% CO ₂ | 3~9 | F & HF | 50~160Amp | 120A 16~17V |
| | | | V-Up | 50~120Amp | 80A 15~16V |
| | | | O.H. | 50~120Amp | 80A 15~16V |
| | | > 9 | F & HF | 150~350Amp | 260A 29~30V |
| | | | V-Up | 80~160Amp | 130A 17~18V |
| | | | O.H. | 140~180Amp | 150A 19~20V |
| 1.6mm (1/16in) | | > 9 | F & HF | 200~380Amp | 300A 29~30V |
| | | | V-Up | 120~180Amp | 160A 18~19V |
| | | | O.H. | 160~200Amp | 180A 20~21V |

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Approvals

❖ Shipping Approvals

| Shielding Gas | Resister of shipping & Size mm(in) | | | | |
|------------------------------|--------------------------------------|-------------------------------|----------------------------------|------------------------------------|--------------------------------------|
| | KR | ABS | LR | BV | DNV |
| 100%CO ₂ | 3YSG(C)H5 1.0~1.6 (0.039~1/16) | 3YSA, 3YSAH10 1.2(0.045in) | 3YSH10 1.2(0.045in) | SA3YMHH 1.2(0.045in) | IIIYMS(H10) 1.2(0.045in) |
| 80%Ar +20%CO ₂ | 3YSG(M)H5 1.0~1.6 (0.039~1/16) | - | 3YSH5 1.2~1.6 (0.045~1/16) | SA3YHHH 1.0~1.6 (0.039~1/16) | IIIYM(H5) 1.2~1.6 (0.045~1/16) |

❖ F No & A No

| F No | A No |
|------|------|
| 6 | 1 |