

SC-460M

METAL CORED ARC WELDING CONSUMABLES
FOR Mild & 490MPa CLASS HIGH TENSILE STEEL

2022.02



❖ Specification

AWS A5.18 E70C-6M

(AWS A5.18M E48C-6M)

EN ISO 17632-B T 55 4 T15 1 M21 A H5

❖ Applications

SC-460M can be used on mild and high tensile steel in single and multi-pass applications. It is ideally suited for high production and automatic applications where large amount of filler metal can be deposited with a minimum amount of slag & spatter. Typical industrial applications include shipbuilding, machinery, bridge, structural fabrication and building.

❖ Characteristics on Usage

SC-460M is a metal-cored gas shielded cored wire which combines the high deposition rates of a flux cored wire with the high efficiencies of a solid wire. SC-460M is recommended for welding of carbon steel having tensile strengths up to 490MPa Provide an exceptionally smooth and stable arc, low spatter and minimal slag coverage in welding

❖ Note on Usage

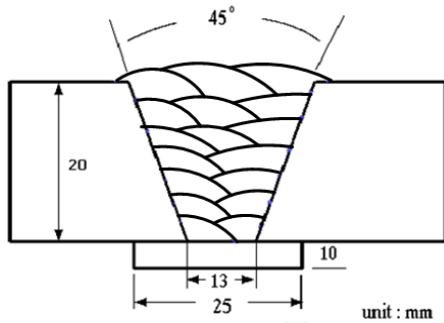
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices
2. Use Ar + 10-25%



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%CO₂
- Flow Rate** : 20 ℓ /min
- Amp./ Volt.** : 280A/ 29V
- Stick-Out** : 20~25mm (0.79~0.98in)
- Pre-Heat** : R.T .
- Interpass Temp.** : 150±15℃
- Polarity** : DC(+)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test (J)	
	YS MPa(ksi)	TS MPa(ksi)	EL (%)	-30℃	-40℃
SC-460M	486(70,000)	580(84,000)	28.8	59	51
AWS A5.18 E70C-6M	≥ 400	480	≥ 22	≥ 27J at -30℃	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni
SC-460M	0.040	0.51	1.58	0.011	0.008	0.35
AWS A5.18 E70C-6M	≤ 0.12	≤ 0.90	≤ 1.75	≤ 0.030	≤ 0.030	≤ 0.50

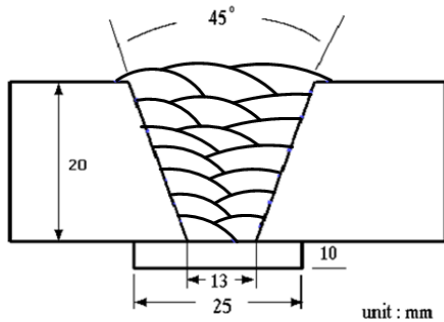
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING 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	: 90%Ar + 10%CO ₂
Flow Rate	: 20 ℓ /min
Amp./ Volt.	: 280A/ 29V
Stick-Out	: 20~25mm (0.79~0.98in)
Pre-Heat	: R.T .
Interpass Temp.	: 150±15℃
Polarity	: DC(+)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test (J)	
	YS MPa(ksi)	TS MPa(ksi)	EL (%)	-30℃	-40℃
SC-460M	500(72,000)	591(85,000)	28.8	69	61
AWS A5.18 E70C-6M	≥ 400	480	≥ 22	≥ 27J at -30℃	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni
SC-460M	0.043	0.59	1.62	0.010	0.008	0.38
AWS A5.18 E70C-6M	≤ 0.12	≤ 0.90	≤ 1.75	≤ 0.030	≤ 0.030	≤ 0.50

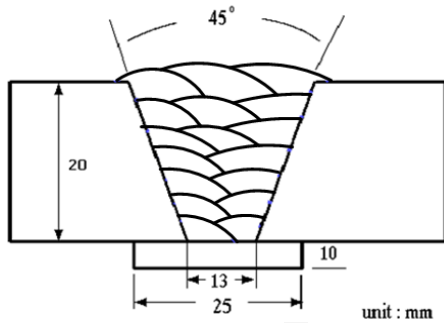
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Mechanical Properties & Chemical Composition of All Weld Metal

❖ Welding Conditions

Method by AWS Spec.



[Joint Preparation & Layer Details]

Welding Position	: 1G(PA)
Diameter	: 1.6mm (1/16in)
Shielding Gas	: 80%Ar + 20%CO ₂
Flow Rate	: 20 ℓ /min
Amp./ Volt.	: 320A/ 30V
Stick-Out	: 20~25mm (0.79~0.98in)
Pre-Heat	: R.T .
Interpass Temp.	: 150±15℃
Polarity	: DC(+)

❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test (J)	
	YS MPa(psi)	TS MPa(psi)	EL (%)	-30℃	-40℃
SC-460M	471(68,000)	579(83,000)	28.4	66	55
AWS A5.18 E70C-6M	≥ 400	480	≥ 22	≥ 27J at -30℃	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni
SC-460M	0.045	0.75	1.63	0.009	0.006	0.41
AWS A5.18 E70C-6M	≤ 0.12	≤ 0.90	≤ 1.75	≤ 0.030	≤ 0.030	≤ 0.50

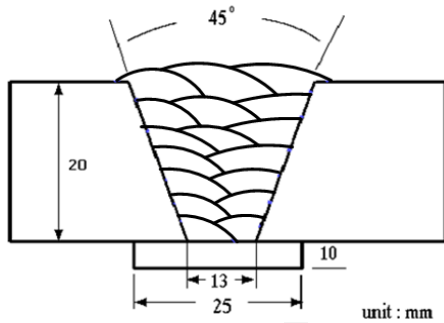
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❖ Mechanical Properties of all weld metal

Consumable	Tensile Test			CVN Impact Test (J)	
	YS MPa(psi)	TS MPa(psi)	EL (%)	-30℃	-40℃
SC-460M	491(71,000)	587(85,000)	27.4	69	54
AWS A5.18 E70C-6M	≥ 400	480	≥ 22	≥ 27J at -30℃	

❖ Chemical Analysis of all weld metal(wt%)

Consumable	C	Si	Mn	P	S	Ni
SC-460M	0.043	0.69	1.57	0.010	0.006	0.44
AWS A5.18 E70C-6M	≤ 0.12	≤ 0.90	≤ 1.75	≤ 0.030	≤ 0.030	≤ 0.50

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Diffusible Hydrogen Content

❖ Welding Conditions

Diameter	: 1.6mm (0.045in)	Amps / Volts	: 320A / 29V
Shielding Gas	: 80%Ar +20%CO2	Stick-Out	: 20~25mm (0.79~0.98in)
Flow Rate	: 20 ℓ /min	Welding Speed	: 30 cm/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
4.1	3.5	3.2	3.5

Average Hydrogen Content 3.6 ml / 100g Weld Metal



Diffusible Hydrogen Content

❖ Welding Conditions

Diameter	: 1.6mm (0.045in)	Amps / Volts	: 320A / 29V
Shielding Gas	: 90%Ar +10%CO2	Stick-Out	: 20~25mm (0.79~0.98in)
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❖ 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
3.9	3.7	3.8	3.5

Average Hydrogen Content 3.8 ml / 100g Weld Metal



Proper Welding Condition

❖ Welding Conditions

Consumable	Shielding Gas	Welding Position	Wire Dia.
			1.2mm (0.045in)
SC-460M	80%Ar +20%CO ₂	F & HF	200~300Amp
	/ 90%Ar +10%CO ₂	V-Up & OH	120~220Amp