

# **SC-420MC**

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

2022.12

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**HYUNDAI WELDING CO., LTD.**



# SC-420MC

## ❖ Specification

**AWS A5.20**

E71T-1C,-9C H4  
E71T-1M,-9M H8

**AWS A5.20M**

E491T1-1C,-9C H4  
E491T1-1M,-9M H8

**EN ISO 17632-A**

T46 3 P C1 1 H5, T46 3 P M21 1 H5

**AWS D1.8**

Wire Dia. mm(in)		
1.2(0.045)	1.4(0.052)	1.6(1/16)

\* AWS D1.8 is available upon request

## ❖ Applications

All position welding of ship hulls, vehicles, bridges, chemical plant machinery and other metal fabrication

## ❖ Characteristics on Usage

SC-420MC is a titania flux cored wire applicable for all-position welding by 100% CO<sub>2</sub> shielding gas or Ar-20~25% CO<sub>2</sub> shielding gas.

Less spattering and good slag detachability shorten the time of bead grinding operation.

## ❖ Note on Usage

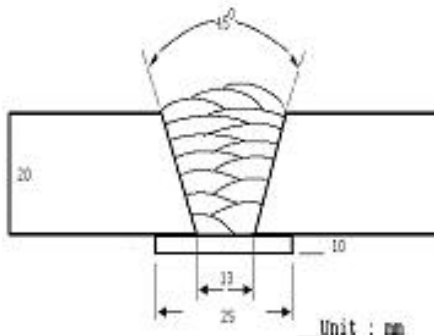
1. For preheating guidelines, please refer to your local standards and codes relative to your best practices.
2. Use 100% CO<sub>2</sub> or Ar+20~25% CO<sub>2</sub> shielding gas



## Mechanical Properties & Chemical Composition of All Weld Metal

### ❖ Welding Conditions

Method by AWS Spec.



[ Joint Preparation & Layer Details ]

<b>Welding Position</b>	: 1G(PA)
<b>Diameter</b>	: 1.2mm (0.045in)
<b>Shielding Gas</b>	: 100% CO <sub>2</sub> Ar+20%CO <sub>2</sub>
<b>Flow Rate</b>	: 20 ℓ /min
<b>Amp./ Volt.</b>	: 280A / 32V, 280A / 30V
<b>Stick-Out</b>	: 20~25mm (0.79~0.98in)
<b>Pre-Heat</b>	: R.T .
<b>Interpass Temp.</b>	: 150±15 (302±59°F)
<b>Polarity</b>	: DC(+)

### ❖ Mechanical Properties of all weld metal

Consumable	Shielding gas	Tensile Test			CVN Impact Test J(ft · lbs)	
		YS MPa (lbs/in <sup>2</sup> )	TS MPa (lbs/in <sup>2</sup> )	EL (%)	-20℃ (-4°F)	-29℃ (-20°F)
SC-420MC	100% CO <sub>2</sub>	520(76,000)	570(83,000)	28.0	60(44)	52(38)
	Ar+20% CO <sub>2</sub>	575(83,000)	630(91,000)	26.0	82(61)	70(52)
AWS A5.20 E71T-9C, -9M		≥ 390 (56,000)	490~670 (70,000~ 97,000)	≥ 22.0	≥ 27J at -29℃ (≥ 20ft · lbs at -20°F)	

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

Consumable	Shielding gas	C	Si	Mn	P	S
SC-420MC	100%CO <sub>2</sub>	0.040	0.40	1.20	0.010	0.007
	Ar+20%CO <sub>2</sub>	0.042	0.50	1.41	0.010	0.008
AWS A5.20 E71T-9C, -9M		≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

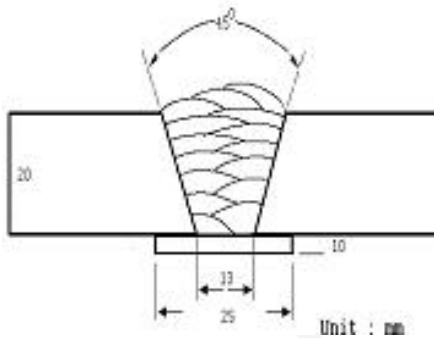
This information is provided solely for the purpose of confirming product conformance with applicable standards. The serviceability of a product or structure utilizing this type of information is and must be the sole responsibility of the builder/user. Many variables beyond the control of HYUNDAI WELDING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

<b>Welding Position</b>	: 1G(PA)
<b>Diameter</b>	: 1.6mm (1/16in)
<b>Shielding Gas</b>	: 100% CO <sub>2</sub> Ar+20%CO <sub>2</sub>
<b>Flow Rate</b>	: 20 ℓ /min
<b>Amp./ Volt.</b>	: 320A / 32V, 320A / 30V
<b>Stick-Out</b>	: 20~25mm (0.79~0.98in)
<b>Pre-Heat</b>	: R.T .
<b>Interpass Temp.</b>	: 150±15 (302±59°F)
<b>Polarity</b>	: DC(+)

### ❖ Mechanical Properties of all weld metal

Consumable	Shielding gas	Tensile Test			CVN Impact Test J(ft · lbs)	
		YS MPa (lbs/in <sup>2</sup> )	TS MPa (lbs/in <sup>2</sup> )	EL (%)	-20℃ (-4°F)	-29℃ (-20°F)
SC-420MC	100% CO <sub>2</sub>	510(74,000)	555(80,000)	28.2	58(43)	50(37)
	Ar+20% CO <sub>2</sub>	565(82,000)	615(89,000)	26.4	80(59)	68(50)
AWS A5.20 E71T-9C, -9M		≥ 390 (56,000)	490~670 (70,000~ 97,000)	≥ 22.0	≥ 27J at -29℃ (≥ 20ft · lbs at -20°F)	

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

Consumable	Shielding gas	C	Si	Mn	P	S
SC-420MC	100%CO <sub>2</sub>	0.039	0.38	1.18	0.009	0.006
	Ar+20%CO <sub>2</sub>	0.041	0.49	1.40	0.010	0.007
AWS A5.20 E71T-9C, -9M		≤ 0.12	≤ 0.9	≤ 1.75	≤ 0.03	≤ 0.03

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## Welding Efficiency

### ❖ Deposition Rate & Efficiency

Consumable (size)	Shielding Gas	Welding Conditions		Wire Feed Speed m/min (in/min)	Deposition Efficiency %	Deposition Rate kg/hr(lb/hr)
		Amp. (A)	Volt. (V)			
SC-420MC	100%CO <sub>2</sub>	280	32	14.3 (560)	86~88	4.8 (10.6)
1.2mm (0.045in)	Ar+20%CO <sub>2</sub>	280	30	14.3 (560)	87~89	5.0 (11.0)
SC-420MC	100%CO <sub>2</sub>	320	32	8.3 (325)	86~88	5.3 (12)
1.6mm (1/16in)	Ar+20%CO <sub>2</sub>	320	30	8.3 (325)	87~89	5.5 (12)
Remark					Deposition efficiency =(Deposited metal weight/Wire weight used)×100	Deposition rate =(Deposited metal weight/Welding time,min.)×60

## Proper Welding Condition

### ❖ Proper Current Range

Consumable	Shielding Gas	Welding Position	Wire Dia.	
			1.2mm (0.045in)	1.6mm (1/16in)
SC-420MC	100%CO <sub>2</sub> or Ar+20~25%CO <sub>2</sub>	F	100~280Amp	140~320Amp
		HF	100~280Amp	140~320Amp
		V-Up & OH	140~260Amp	160~280Amp
		V-Down	100~280Amp	140~260Amp

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## Diffusible Hydrogen Content

### ❖ Welding Conditions

<b>Diameter</b>	: 1.2mm (0.045in)	<b>Amps(A) / Volts(V)</b>	: 240A / 27V
<b>Shielding Gas</b>	: 100%CO <sub>2</sub> , Ar+20%CO <sub>2</sub>	<b>Stick-Out</b>	: 20~25mm (0.79~0.98in)
<b>Flow Rate</b>	: 20 ℓ /min	<b>Welding Speed</b>	: 30 cm/min (12 in/min)
<b>Welding Position</b>	: 1G (PA)	<b>Current Type &amp; Polarity</b>	: DC(+)

### ❖ Hydrogen Analysis Using Gas Chromatography Method

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

### ❖ Result(ml/100g Weld Metal)

	X1	X2	X3	X4
<b>100% CO<sub>2</sub></b>	<b>3.8</b>	<b>3.9</b>	<b>3.8</b>	<b>3.6</b>
<b>Ar+20%CO<sub>2</sub></b>	<b>4.6</b>	<b>4.4</b>	<b>4.8</b>	<b>4.7</b>

**Average Hydrogen Content 3.8 ml / 100g Weld Metal (100% CO<sub>2</sub>)**

**Average Hydrogen Content 4.6 ml / 100g Weld Metal (Ar-20% CO<sub>2</sub>)**

### ❖ F No & A No

F No	A No
6	1



## Approvals

### ❖ AUTHORIZED APPROVAL DETAILS

Welding Position	Shielding Gas	Register of shipping & Size(mm)		
		DNV	BV	RINA
All V-Down	100% CO <sub>2</sub>	3YMS(H5) 1.2mm(0.045in)	SA3Y HHH 1.2mm(0.045in)	3YS H5 1.2mm(0.045in)
All V-Down	Ar+ 20%CO <sub>2</sub>	3YMS(H5) 1.2mm(0.045in)	SA3Y HHH 1.2mm(0.045in)	3YS H5 1.2mm(0.045in)

Welding Position	Shielding Gas	Register of shipping & Size(mm)	
		ABS	DB · TUV
All V-Down	100% CO <sub>2</sub>	3YSA H5 1.2mm(0.045in)~1.6mm(1/16in)	EN ISO 17632-A-T 46 3 P C1 1 H5 1.2mm(0.045in)~1.6mm(1/16in)
All V-Down	Ar+ 20%CO <sub>2</sub>	3YSA H5 1.2mm(0.045in)~1.6mm(1/16in)	EN ISO 17632-A-T 46 3 P M21 1 H5 1.2mm(0.045in)~1.6mm(1/16in)

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